

# ARCHITECTURE

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• C O N T E N T S •

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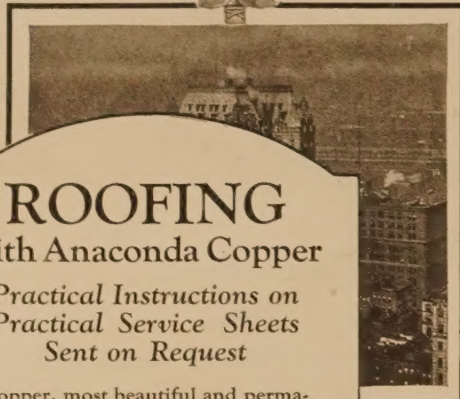
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### FLASHING OF PARAPET WALLS

The two methods shown are those generally used. The one given on the left is preferable as it does not break the bond of the wall. Flashings turn up on wall at least 6". Counterflashing should lap flashing at least 4".

FIG. 2

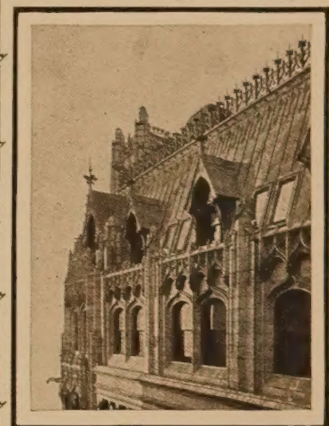
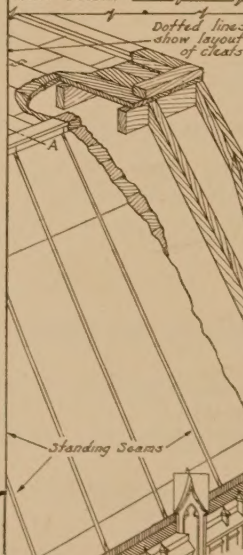
All counter or cap flashings should have edge in the wall turned up  $\frac{1}{2}$ " and outside edge provided with a lock or fold.

SCALE  $\frac{1}{2}$ " = 1'-0"

Cap and base flashings are of soft copper roofing.

FLASHING  
 STUCCO WALL  
 SCALE  $\frac{1}{2}$ " = 1'-0"

Dotted lines show layout of cleats.



WOOLWORTH BUILDING NEW YORK  
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### GUTTERS

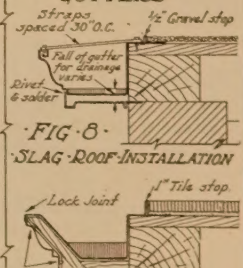


FIG. 8

SLAG ROOF INSTALLATION

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# ANACONDA







ISLE OF SAN MICHELE, VENICE.

Formerly a convent, used as a cemetery since 1830. Church built in 1470. Small round chapel built 1510.



# ARCHITECTVRE

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VOL. XLVI

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NO. 2

## Peking and the Pagoda

*By Helen Churchill Candee*



Ten Ling Ssu belonged to old Buddhist temple.

WE have to thank the Buddhist for the pagoda. The impulse is to thank somebody for very joy when the first pagoda creeps into one's consciousness from its far enthronement. While a thrill is given to the nerves, the eyes blink with unbelief at the strange beauty, aloof and distant, of something never seen before, some fantastic furnishing of a fairy-tale.

To Buddha were the first pagodas built, and under them or within them were placed relics of the Worshipful. But after a time the bones of the minor saints were considered sufficient excuse for the erection of the exquisite tower of religious intent. It might be thought that no excuse at all was necessary for the creation of an architecture so gracefully ornate. More recent pagodas have been built for the most human of reasons—put up to bring luck to a community. More delightfully in keeping with the Chinese temperament, they have been built for pure joy, to enliven the neighborhood, to heighten the people's morale. An idea lies in this for both architects and public to consider. Do we ever, with a burst of joy, order the erection of a purely beautiful tower in a barren spot?

The Chinese roof is a matter for the erudite. In its history is found the tent, which was the beginning of man-made shelters. Bamboo poles naturally sustained the tent, and increased in number when tiles replaced the covering of skins or fabric. And thus the roof became the builder's fondest architectural care.

A study of the Chinese roof may seem inappropriate to the pagoda, but after scrutiny the roof proves to be its main decoration, and, next to the tower itself, it is the chief architectural feature. A pagoda is at the last analysis a series of roofs placed like a series of ornamental rings around the tower.

These roofs are invariably of an odd number, and run from three to thirteen. Is it true that in this multiplicity of roofs in the building, the offering to Buddha counts as the erection of many buildings?

The tower of Ten Ling Ssu on the outskirts of Peking

shows the massed beauty of the maximum of thirteen roofs. Its pedestal holds an entrance door guarded by the gods who, with their stupendously hideous appearance, affright the spirits of evil. This in carved marble, while above, the structure is laid with a bewildering arrangement of brick, and glazed tiles cover the thirteen roofs and a symbolic finial raises its harmony to heaven.

The tower of Fa Ta Ssu, on the other hand, is simplicity itself, girded with but seven roofs and finished with an ovoid finial.

It is the group in the western hills that draws the lover of the pagoda. The Old Buddha, as her admiring detractors call the late Empress, knew the value of the region, knew the repose lying on the rocky heights of the treeless mountains rising from the Chi-li plain under twenty miles from Peking, and she set near by the summer palace with its bewil-



Pagoda of Fa Ta Ssu.





Buddhist pagoda decaying in the Western Hills.

dering variety of buildings, terraces, and pergolas. Beyond the palace, where the mountains rise tentatively in little spurs, stand pagodas of enthralling beauty, not one alone, pointing the pilgrim's way, but several, each revealed from different points along the road, standing against the sky in fixed forms of grace with power to thrill, to inspire.

Part of an old monastery or temple is one which raises its seven roofs among the pines of the western hills. Its base is rapidly tumbling to pieces, fallen brick and displaced stones littering the ground; yet the shaft itself endures bravely the neglect which poverty and a republican government force upon it. On each story are niches in which are placed figures of the Llama Buddha, that Thibetan note in art so often dominating the true Chinese. Time has destroyed the finial, but tinkling bells still ornament the three upper roofs.

Beautifully preserved is the pagoda of the alluring name, the Pagoda of the Jade Fountain. Its surroundings are of the roughest, but it stands, an exquisite gem, a testament to the power of beauty. On a carved base rests an expanded lotus in the fulness of its bloom. From the heart of this wide flower springs the high light tower of carved marble and colorful tile, octagonal in shape, rising story upon story until seven roofs have spread their shining beauty to be completed by a symbolic finial.

Each story carries panels of Buddha, but it is the series of roofs which by their elaborate perfection give this tower a surpassing loveliness. A lavish number of conventionalized bamboo poles support row on row of glazed tiles in color, forming a series of scallops or festoons. Added to all this harmonious detail are the ridge-poles—if they might be so called—to which is given the almost prehistoric decoration of a line of animals, some fabled, some domestic, which tradition sets as a protection against marauders—the civilized ghosts of the house-dogs of primitive man.

The Pagoda of the Jade Fountain carries as its crown a finial like unto a dagoba, and that in turn shows trace of remembered roofs, always of an odd number. But the subject of dagobas, stupas, and the like is another tale, one too long for a brief digressing.

That the pagoda roofs are not always evenly spaced one knows by the first glance at an ornate tower that stands in lovely protest against the ruin amid which it springs. Unlike the Jade Fountain, it is set in the dignity of a beautifully composed approach and pedestal. The roofs are seven, in groups of two and three, between which groups the panels of the octagon rise in elaborate repeated ornament, the loved figure of the Thibetan Buddha, each harbored in its own close niche.

The finial is worth a study, for it is of metal, umbrella-shaped, with hanging bells which delight the ear with joyous tinkling at the touch of the wind. This golden umbrella with bells is a royal emblem, and although it reaches North China from Thibet, it is seen on the ancient pictured legends cut in stone, not as a

symbol, but as a reality.

Between the western hills and Peking stands the Pagoda of the Five Towers, which is not a pagoda according to our ideas, nor are the towers as much towers as pyramids. Yet even here the dominant architectural detail is the roof, or the eaves of the roof, many times repeated. On the carved



Pagoda of the Five Towers.





Pagoda of the Jade Fountain.



Pagoda of a ruined Buddhist temple.

marble temple seven lines obtrude, and on each of the five pyramidal structures above are eleven or thirteen. The rest of the detail speaks of Thibet with the slender figure of Sakya Muni many, many times carved in encircling rows.

In these latter days we are not blind as in the past to the wondrous beauty of Chinese art. More and more eager

we are to adapt if not adopt certain Eastern architectural ideas and details. With so much rich beauty vested in the pagoda of North China, it were a pity could not some of our designers pluck a thought or two from the architecture of a grand old race, the only one whose art has for five thousand years never known obliteration or decay.

## The Way Chicago is Solving the Labor Problem— The Landis Award

### The Biggest Building Boom the City Has Ever Known

ONE of the most interesting addresses made at the recent convention of the American Institute of Architects was that of Mr. T. J. Donnelly, chairman of the Citizens' Committee of Chicago, on "Industrial Relations." He was introduced by Mr. Robert D. Kohn.

I don't think it is necessary for me to tell you what the conditions in the building trades of Chicago have been. The building industry of the last five or ten years was such, through the combinations of labor and capital, the combinations of contractors, the combinations of materialmen, limitations of materials, the wasteful practices of unions, sympathetic strikes, and the attendant graft cost, that building costs grew so large that business could not afford to build, and it was absolutely beyond the hope of the poor man or the ordinary man in industry to think of owning his own home.

A year ago this May the contractors in Chicago, attempting to revive the building interests, tried to reduce the scale from \$1.25—the flat scale of \$1.25—to \$1.00 an hour. This resulted in a strike of some six weeks. As a result of that strike the unions suggested arbitration, which was finally accepted, and they suggested the name of Judge Landis, which was also accepted. I think the contractors and the business public looked upon the selection as

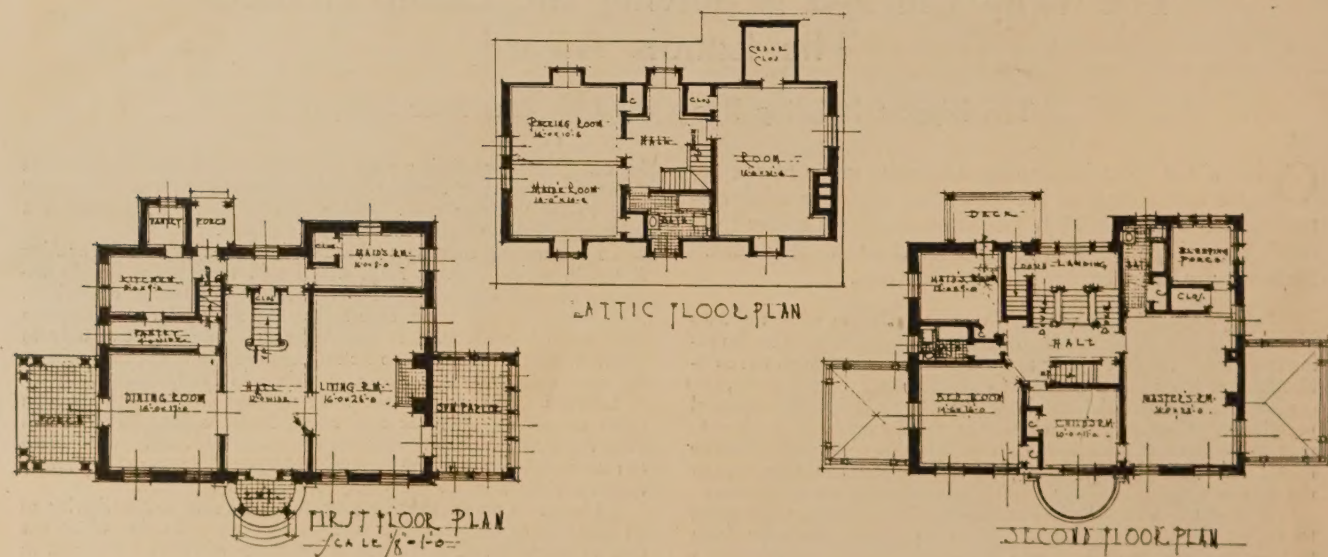
kance. Judge Landis is a man of tremendous human interest and sympathy, and they thought he might give the best of it in every way to the working man. Judge Landis, however, performed a very remarkable piece of work in his decision.

I understand there was an article in the paper called *The New Republic*, which I never read, which said that Judge Landis exceeded his authority when he went into the question of conditions. Now, the man who wrote that article has not read the arbitration agreement, because in that agreement the Judge was not only to fix the wage-scale but also to fix the conditions and try to eliminate the conditions which had been so serious in the building industry of Chicago. In fact, we had built up here in Chicago, through years of unholy alliances and crookedness, conditions of which even the better unions themselves were ashamed, and I think both the union leaders and contractors and the public were all anxious to get a clean slate so the thing could be swept aside.

I want to emphasize the fact Judge Landis had authority to go into the conditions. He very soon saw a reduction of 20 per cent in wages would make only a difference of about 5 per cent in the cost of building. What was keeping the cost of building up was the combination of sympathetic strikes and graft. He accepted the fact that the building industry in Chicago had been a mo-

(Continued on page 237)





HOUSE, JOS. K. HUBBARD, GUILFORD, BALTIMORE, MD.

Roy G. Pratt, Architect.



(Continued from page 235)

nopoly, and his idea was to surround that monopoly with such guaranties to the public that there would be a square deal, and I think when you read the award of the Judge that you will find it was as just and fair an adjustment of a labor dispute as you could expect.

As the carpenters were not members of that arbitration agreement, they said their rules were better, but it was agreed between the carpenters and contractors when the decision was handed down that the Judge's decision would be the basis for negotiation. The Judge not only set the wage-scale of those twenty-five or thirty trades which had agreed to arbitrate but he also made a scale which would be a fair scale if the other unions had been in arbitration, because this whole scale had to be treated in its entirety. You could not expect one trade to get an advantage over another trade—the whole thing had to be taken in.

The carpenters getting \$1.00 an hour—previously getting \$1.25 an hour—after some negotiations with the contractors said that they would sign their names on the bottom of the paper, and they, the carpenters, would set their own rate. I am glad to say the carpenters realized that they had a public service to perform, and if they accepted the \$1.25 they could not expect the masons, the steam-fitters, and all the other trades that had accepted this award in good faith to be penalized by observing that, and consequently they decided to put the carpenters in open shop. They collected about \$125,000 and finally found they had a job too big for them. We presented the situation and showed these gentlemen this was the challenge to the citizenship of Chicago. Was Chicago going to continue to be in the grasp of a lot of criminal labor leaders or did we have enough red blood in Chicago to free ourselves of this domination?

A committee was appointed, of which I have the fortune to be a member, and we canvassed the situation in Chicago, with the purpose of cleaning up the situation. In our talks to certain people we found this: we were told the citizens of Chicago, the business men in Chicago, were not interested in the fight between the carpenters and contractors, it was simply a fight for settlement. It meant no matter what the settlement was, the carpenters were still in control of the industry and in three or four years the situation would be as bad as it was before, because no matter what the settlement was the next year or the next year would see the carpenters making a new demand and the contractors in settlement of the strike would give in two years what they would not give now. But they did say that this was a fight to clean up the situation in Chicago and give citizens in Chicago a permanent, sensible peace in the building industry that was worth any cost.

On the strength of that we went back to the committee and said we would undertake to organize a Citizens' Committee and raise the money if they made certain guaranties to us. These were that those unions that went along with the Landis award would be supported; those trades, however, that refused to accept the Landis award, when they put men on those trades willing to work under the Landis terms, would stay on—there would be an open-shop condition, there would be no settlement, no association—the only way for men to come back for permanent work would be non-union, and at least 50 per cent of the men on the job would be non-union.

On the basis of this one Friday night at twelve o'clock invitations to two hundred and fifty leaders in industry, finance, and professions were invited to join the Citizens' Committee. By twelve o'clock the next day we had over one hundred and seventy-four telephone acceptances upon this committee. The committee now consists of one hundred and sixty-nine people. We organized, incorporated, and started out to raise \$3,000,000. Our principles were just exactly as we laid them out with the contractors, we were to support those unions that had gone along; those unions that did not go along were to be put on the open-shop basis and continued on the open-shop basis. We inherited the strike of the carpenters. There were at that time eight other unions not living up to the Landis award. In each case the committee spent anywhere from three weeks to six months negotiating with the leaders of these unions, trying to persuade them to accept the Landis award. We spent anywhere from six weeks to three months attempting to bring pressure to have these unions accept the Landis award. We brought the national presidents here, we had what we supposed were secret ballots—we gave the unions a chance to come in and be good. The only one that came in was the plasterers, and the rest refused to do so.

The Executive Committee of this Citizens' Committee is made

up of eight people, five of whom are manufacturers, one a merchant with his establishment entirely non-union, the manufacturers running non-union shops, another a banker, and a retired Board of Trade operator.

In making up that committee we realized we were throwing ourselves open to criticism, all interested in fighting unions, but we felt the time had come when we must look to the future. It was easy enough to win a battle but more important to see after you had won the war that the terms of peace were such that you would not have a recurrence of that war within the next two or three years. So we purposely made up this committee of the people who had been in the game for years.

It has been claimed this was a movement to put Chicago on the open-shop basis. It was no such thing. We on that committee realize that we have a public trust and we no more let our personal ideas influence the work of this committee than we would think of using the money which has been subscribed so liberally to carry on. But we did feel when we promised the citizens of Chicago we were going to deliver them a permanent peace that it was necessary to see in the final settlement that terms of permanent peace could be guaranteed.

I suppose you are wondering what we are spending all this money for. In the first place we are importing men—we have imported twelve thousand. We are guarding men on the job. We have had as much as six hundred guards on the job protecting the men on the job and in their homes, and we insure them against vandalism, explosions, etc. Of course we have a large expense and we have a large overhead operating expense of our offices. We started out with the idea that we were going to try to clean up an industrial situation, but we very soon found that instead of an industrial situation we had a criminal situation.

To-day we have twenty unions playing with us and we are backing them up 100 per cent. We have twelve unions on the open-shop basis. The reason these people are fighting to retain their grip on the situation is because they realize if the Landis award is put over they will lose their opportunity of calling sympathetic strikes and jurisdictional strikes, and therefore lose the opportunity of putting on graft that has amounted to hundreds of thousands, and millions of dollars a year. We have had a good deal of bombing—even the contractors have had their homes bombed. Of course the buildings bombed are all covered by insurance. We have had men shot at; fortunately not killed. We have had men slugged; but it is all incidental to the fight.

Just recently the thing came to a head by the killing of two policemen. The situation in Chicago had gotten to the place where criminals who had injected themselves into the unions and taken possession of them and could bring strong-arm methods to bear thought through the supposed political influence of the labor vote that the police, the state's attorney, the judges, and even the juries were afraid to convict them, and I am sorry to say the history of the last four or five years in Chicago proves that that is so. And they absolutely thought they had control of this town, and had no more compunction of shooting men than you or I would have of walking into that room and taking our supper. As a result of this, we obtained one thousand more police, \$100,000 more in funds, more prosecuting attorneys whom we select, more judges sent to the criminal courts to try these crimes, and while we had no intention of cleaning up a criminal situation, we are now in a situation where we have also to guaranty to this town that a crime committed in the name of labor unionism will be prosecuted just as any other crime.

We are in the biggest building boom Chicago has ever had. A year ago building was in the dark. Last month was the biggest month of building permits Chicago had ever issued; this month will exceed by a good many million dollars. It has been very embarrassing for us to fight this kind of a fight when every man laid off in one trade is taken by somebody else. We are operating about 60 per cent of the jobs in money in the city of Chicago. If anybody said we would have building going on in Chicago where twenty unions were working peaceably with twelve trades on the open-shop basis, they would have said we were crazy, but that is the situation. We have not had a strike in Chicago for eight months of any kind whatsoever.

To the best of our knowledge no graft has been paid in Chicago for the last eight months. Our control has been almost entirely through the architects, for without the architects we could not have done anything.

The architects in Chicago have stood behind this committee almost to the man.





LAND FAÇADE.



THE LOUNGE PORCH.

INDIAN HARBOR YACHT CLUB, GREENWICH, CONN.

Henry C. Pelton, Architect.





Cooper Branch, Free Public Library, Camden, N. J.

## The Cooper Branch Library in Johnson Park, Camden, N. J.

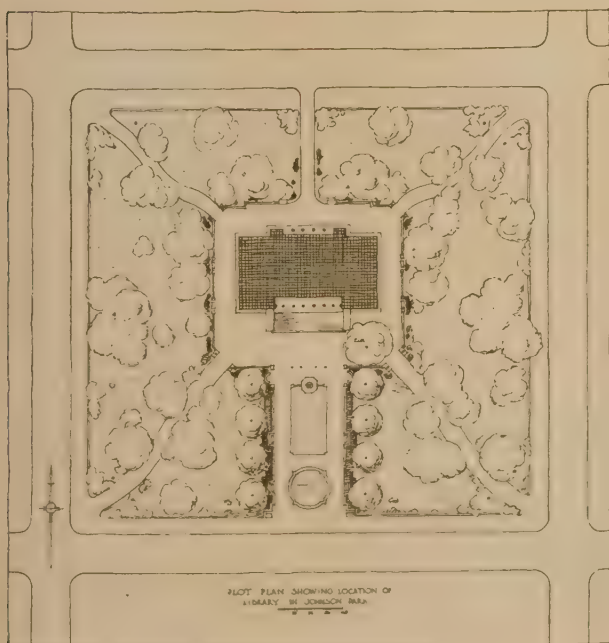
Walter T. Karcher and Livingston Smith, Architects

**T**HIS building and the development of the park were the gift of Mr. Eldridge R. Johnson to the city of Camden. The library replaces the smaller cramped quarters formerly situated on the same site. The district was at one time en-

tirely residential but is now giving way to industrial plants. The main purpose in the donor's mind was to endeavor to maintain as a place of beauty one of the few remaining open spaces in the city. He hoped also to create a mental attraction for some of the thousands of workers in his own plant near by. Both of these purposes have been accomplished.

The square was the typical small city square with the central flower-bed and radiating diagonal paths. Like all city squares it had the occasional shade trees and almost no appropriation for anything beyond the initial planting. It boasted an elm, a scion of the Penn Treaty Tree in Philadelphia, which was kept sacred and undisturbed. The building was set back of the centre of the square to miss this tree, the central flower-bed uprooted and an "entourage" substituted, the diagonal paths were retained leading into this, and a broad approach to the main front created. In this approach were placed an ornamental fountain, a grass carpet, and a mirror pool, which last has developed into a more useful existence as a wading-pool for the children, who immediately appropriated it. Stone benches and balustrading, evergreens and new lighting completed the development of the square. The fountain is unique in that the dry, purely architectural ornament has been entirely eliminated in favor of marine animals and objects, and has a distinct color note in the rich tawny pink of its stone.

The library is of buff limestone with monolithic columns. An attempt was successfully made to enrich the shadow of the portico with color. A glass mosaic frieze seven feet high picturing an allegorical theme forms a band across the front and sides of the portico, and it is believed this is the only



PLAT PLAN SHOWING LOCATION OF  
LIBRARY IN JOHNSON PARK





The reading and delivery rooms.

example of its size where this method of color enrichment is used on the exterior of a building in this country.

The open-shelf distribution type was the type desired for the library. The main reading and distribution room goes two stories, the full height of the building, and opens off on opposite sides into a children's room and a reference-room of one story each. In the story over these two latter are study-rooms and an auditorium. Separate access and exit can be had to the auditorium and the children's room without going through the main library-room.

This main room is lighted by both skylight and north window across one full side of the room, and has a rich ceiling and frieze in colored plaster, the shields in the latter bearing the quaint characters of the printer's marks of the Renaissance.

The doors and trim are practically the only wood in the building—the bookcases are of steel, window-frames and sash of bronze, and stairs of bronze and marble. The floors are cork tile.







## Editorial and Other Comment

### *In Behalf of Art*

IN presenting Doctor Howard Walker with the gold medal of the American Institute of Architects for his most helpful and valuable work in behalf of art, the Institute honored itself as well and made manifest very clearly that, after all, architecture and art are always one.

Now and then some one tells us to "drop all that high-brow stuff and talk facts, write facts, live facts, eat them if possible." Some of us do, or try to, for a time, and then suffer from an acute attack of indigestion and take a big dose of some spiritual stuff (no, not hooch) as an antidote for facts. Maybe this dose will be a day spent in the Metropolitan Museum of Art or in one of the museums of our other cities—the Inness room at Chicago, for instance—or a day in looking over our photographs of beautiful architecture and paintings.

Doctor Walker's address in accepting the honor was one of the specifics for too much dwelling on facts and things that facts stand for. In his travels he visited and spoke at a number of educational institutions, carrying his message of art and trying to get from them their views on the best methods of making art a part of every well-regulated university course.

I spoke to the presidents and the faculties, and no two of them were alike. There was only one common bond between them, and that was that they were entirely sympathetic and enthusiastic; so much so that I almost wondered why I was there. But I found that while the condition of enthusiasm existed, there was absolutely no organization.

The argument that I used which seemed to occasion the most response was this: that I had been talking with a French officer who was speaking of our men abroad. He said that the American soldier trained well, died well, but he went beyond his objective and had too many casualties. And I said that in our desire and our hunger to get ideas, especially in regard to art, we were going, and had gone, before our objective because we did not properly train. I took one college professor and said: "Look down on that street and you will observe the casualties on both sides as far as you can see."

There was another point, and I think this point is an extremely serious one, one that I pressed hard. There are not more than ten per cent, hardly that, in colleges such as Harvard who take a post-graduate or graduate course in art. The other ninety per cent are going out, however, as supposedly well-rounded college men. Some of them will become the heads of large financial interests, many of them chairmen of village improvement societies.

"A little learning is a dangerous thing,  
Drink deep, or taste not the Pierian spring."

These are the men controlling funds with whom you will deal in committees, they will be in control, and the constant desire on our part will be to satisfy them, and at the same time teach them. But they don't like to be taught, even if they have had no education in art.

It will be the duty and, we feel sure, the ambition of every architect in the country to let his light so shine that even those with closed eyes may at least sense the flash. Doctor Walker talked in Chicago, but his message will be spread from the Atlantic to the Pacific and from the North to the South by architects who attended the convention and their fellows.

From the far coast we hear from Willis Polk: "Every country, in achieving commercial supremacy, has always in so doing become a patron of the fine arts. The United States is in that position to-day, and it is certain that the impending American renaissance in art is destined to be the greatest in history." Hear, hear! we say, for it is by such faith that miracles are done.

### *Zoning—Chicago's Need*

THAT New York has been blessed with her zoning system is generally conceded. It has put an end to irresponsible building and utter lack of consideration of the property rights of others, and been a great stabilizer of real-estate values. The protection of certain residential districts from the inroads of factory and loft buildings has led many home-seekers to invest in houses and added much to the architectural interest and charm of many side-streets off the line of the congested districts.

Many old brown-stone houses, the inheritance of New York's worst era of residential building, have been altered into attractive apartments or residences, and the tendency in this direction is increasing with the demand for city homes of a moderate cost.

Few cities in the country have grown with the rapidity of Chicago and few have been blessed with so much space to expand in without overcrowding or the need of piling story on story in order to make the land a profitable investment.

A recent trip over the roads that lead along the beautiful North Shore revealed the fact that the inroads of business in that section promise before long to bring about the same conditions that have done away with the ancient grandeur of New York's Fifth Avenue, and also driven many from the quieter charm of Madison Avenue.

Homes along the North Shore are giving way to business, and there is every indication that in a few years the mansions of the rich in that section that once were the boast of the windy city will be no more.

Their places will be occupied by tall blocks devoted to trade. Cheap apartment-houses with stores on the ground floors are now going up as fast as the speculative builders can find the materials and workmen, and it does seem a pity that those who have long made the region one of beautiful homes should be driven out.

Trade knows no law but the law of profit or loss, and trade has apparently decided that the trend of the small



retail business is northward, and that it will be good business to move while the moving is good and before the city wakes up to the realization that one of her chief claims to fame has vanished.

Chicago has not been used to do things by halves; she has marked out her own destiny and followed her own ways with marvellous results and with a dynamic force that nothing can ever stop.

It is high time that she took thought of her future in the way of self-determination in this matter of zoning.

Now is the appointed time, for to wait is only to make the problem more difficult, if not impossible.

She has shown what she can do in her wonderful system of parks, the envy of all New Yorkers and of other cities that have not had her vision.

The city has been too busy, maybe, to take time to think of this matter of zoning, but even those who have believed that she could do no wrong, when it meant civic pride, have begun to wonder why this big question of zoning has not before now been given the consideration that it deserves.

The city is engaged in one of the greatest building booms in its history, and this in spite of the labor troubles that have menaced construction all over the country. Since the Landis award she has taken things into her own hands with characteristic vigor, and nothing can prevent, apparently, the carrying out of her plans to complete the great work in hand.

In another part of this number we print the address of Mr. Donnelly, the chairman of the Citizens' Committee, and evidently it is to be a fight to the finish.

Chicago has had her trials, and she has met them with vigor and the kind of courage that does not know the word defeat. All she needs is a start; the rest follows as a matter of course and leads to the ends desired.

Chicago too, by the way, has her traffic problem to solve; even a greater one than is presented in New York. The congestion in The Loop and on Michigan Avenue at times makes Fifth Avenue look well regulated, and we must say that we are always inclined to take off our hats to the splendid work of our own traffic police, who are handling a tremendous problem with both patience and good sense.

### *Mr. Hastings Honored*

AN American architect and American architecture have again been highly honored by the presentation of the Royal Gold Medal for Architecture by King George to Thomas Hastings. The late Charles F. McKim received the medal in 1903. Mr. Hastings designed the great Victory Arch that was so much admired when it stood at Fifth Avenue and Madison Square, the Memorial Amphitheatre at Arlington where the unknown soldier rests, and the firm of Carrère & Hastings designed the New York Public Library and other notable buildings.

### Effect of the American Plan in San Francisco

*By Warren H. McBryde*

President, Industrial Association of San Francisco

ANY suggestion that the American plan in any manner has injured the worker or prejudiced his legitimate interest is disproved irrefragably by figures and data recently compiled. These figures and data, secured from reliable sources and put to the most rigid test of authentication, show that the building-trades mechanic of San Francisco is

at least 10 per cent better off to-day than at any previous time since as far back as 1913. Not that wages are higher now than ever before, but that the margin between wages and the cost of living is less, and that steady work is far more plentiful than at any time during the past nine years.

During the period from 1913 to and including 1920, throughout all of which time the unions exercised the most complete control over wages and working conditions, the mean margin between the average wage of the building-trades mechanic and the average cost of living was approximately 25 per cent. Furthermore, during this time, and because of frequent strikes and the resultant lack of confidence of the public, there was far less steady work available for the building-trades mechanic than there is at the present time.

It is interesting, also, to observe that these same figures and data show a 10 to 15 per cent increase (over 1918, 1919, and 1920) in the efficiency and skill of the average building-trades craftsmen. This gratifying increase is, of course, simply the result of the abrogation of all those rules and regulations, designed to limit output by curtailing efficiency, which prevailed prior to the effectuation of the American plan.

### The New Haven Architectural Club

AT a special meeting of the board of directors of the Architectural Club of New Haven, William J. Allen, architect of that city, was unanimously elected president of the club in place of Louis L. Norton, resigned.

A. M. Thomas, who has been the efficient and zealous chairman of the entertainment committee and chairman of the nominating committee, was unanimously elected to the secretaryship of the club. Theodore O. Appel and Alfred W. Boylen were unanimously elected members of the board of directors.

### The Dallas Architectural Club

WE acknowledge with pleasure the receipt of the interesting "Year Book of the Dallas Architectural Club and Catalogue of the First Exhibition."

"It presents the best examples of the present-day Texas Architecture" and the allied arts, and we hasten to say that the various exhibits are well worth showing, and reflect great credit upon the architects and others who are represented.

The Alfred C. Bossom Medal was awarded to S. C. P. Vosper for his design for the Year Book cover, a study of an old Spanish mission church. The jury of award was composed of Clarence C. Bulger, C. D. Hill, and Frank O. Wittchell.

### Book Reviews

GOOD HOUSES. TYPICAL ARCHITECTURAL STYLES FOR MODERN WOOD-BUILT HOMES. By RUSSELL T. WHITEHEAD, Architect. Illustrations by Birch Burdette Long, Delineator, Weyerhaeuser Forest Products, St. Paul, Minnesota.

Mr. Whitehead has gathered together a most interesting number of fine old houses, and included some modern examples built to type.

The selections are admirable, and printing them in tint adds much to the charm of the illustrations.

There are examples of American Colonial, Dutch Colonial, Southern Colonial, Pennsylvania Colonial, American Georgian, Transition Period, The Classical Revival, English, Italian Renaissance, Spanish, Swiss, American Prairie, Bungalow, etc.

The letter-press deals with Good Houses, Styles of Architecture, Why a House of Wood, Your Selection of a Style, Planning the House, The Proper Use of Lumber. The book is attractively bound in cloth, and makes a desirable addition to the architect's library, and should prove of especial value to all concerned in house-building.





MAIN FACADE, COOPER BRANCH, FREE PUBLIC LIBRARY, CAMDEN, N. J.

Walter T. Karcher and Livingston Smith, Architects.









REAR OF BUILDING, COOPER BRANCH, FREE PUBLIC LIBRARY, CAMDEN, N. J.

Walter T. Karcher and Livingston Smith, Architects.



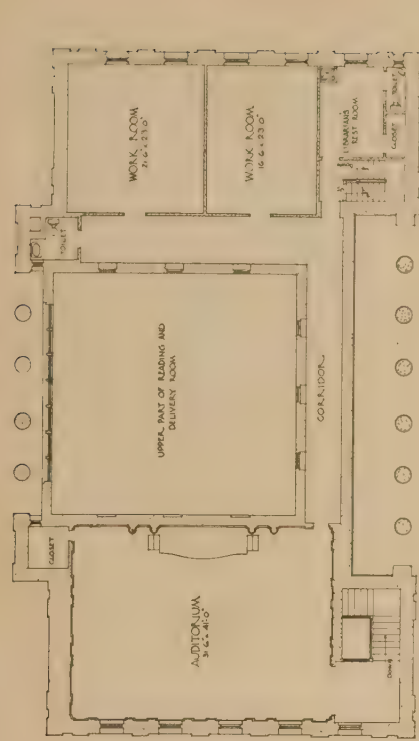




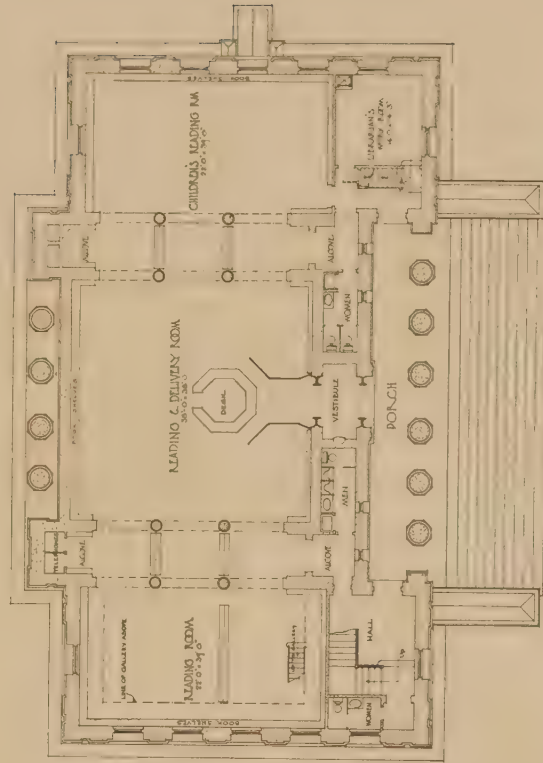


ENTRANCE DOORWAY, READING AND DELIVERY ROOM.

COOPER BRANCH, FREE PUBLIC LIBRARY, CAMDEN, N. J.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

PLANS.

Walter T. Karcher and Livingston Smith, Architects.

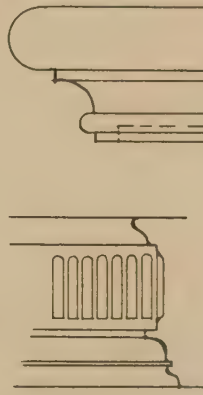




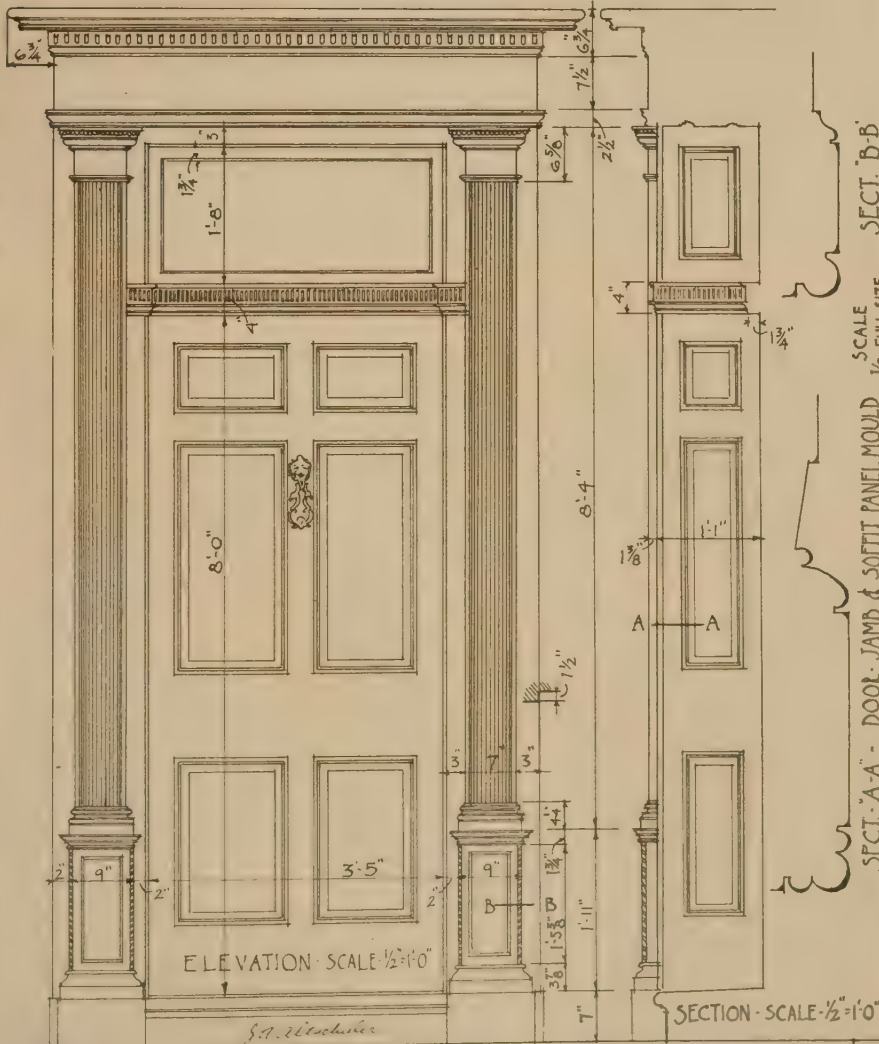
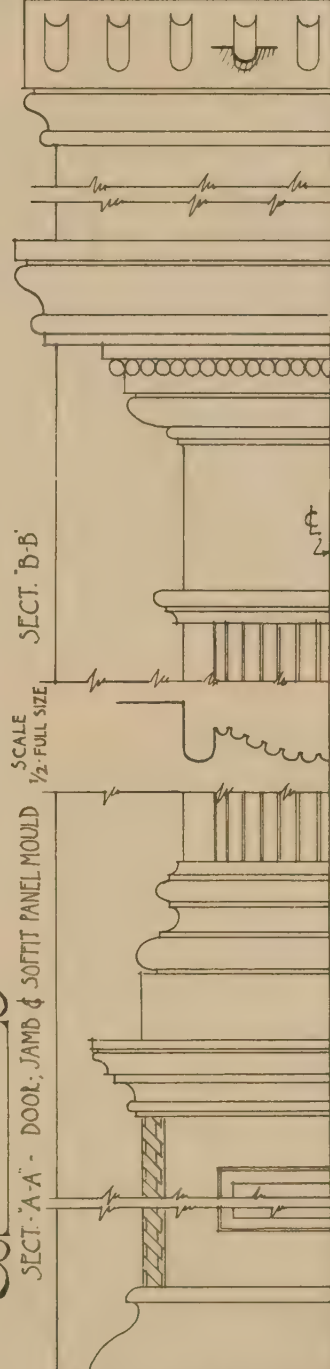




DETAIL OF DOOR  
KNOCKER  
SCALE - 3-IN = 1-FT.



SECT. THRO  
TRANSOM BAL  
SCALE - 3-IN = 1-FT.



ELEVATION SCALE  $\frac{1}{2}'' = 1'-0''$

SECTION - SCALE -  $\frac{1}{2}" = 1'-0"$

DETAIL  
SCALE - 3 IN. = 1 FT.

# COLONIAL ARCHITECTURE of the CAROLINAS

DOORWAY - 14 LEGARE ST.  
DATE-ABOUT-1802 CHARLESTON-S.C.

MEASURED & DRAWN  
by  
J.A. ALTSCHULER









A COMPREHENSIVE EXTERIOR VIEW, SHOWING MEN'S LOCKER-ROOM, DINING-ROOM, AND LIVING-ROOM.



GENERAL EXTERIOR VIEW, WITH PORCH CONSTRUCTED OF RUSTIC TIMBERS.  
NORWOOD GOLF CLUB, LONG BRANCH, N. J.

Harry Allan Jacobs, Architect.









View of garden, showing the end of the dining-room and men's locker-room. A mixture of stone, rustic timbers, and the half-timber and stucco, with gray-brown shingle roof.



Interior of living-room, the high ceiling taking advantage of the entire roof height and showing large wood trusses of highly decorative value. Orchestra balcony between dining-room and living-room.



The end of the living-room and entrance porch. The buttresses counteract the thrust of the heavy trusses on the inside of the living-room.



Tall fireplace in living-room, built of Princeton stone.

NORWOOD GOLF CLUB, LONG BRANCH, N. J.

Harry Allan Jacobs, Architect.



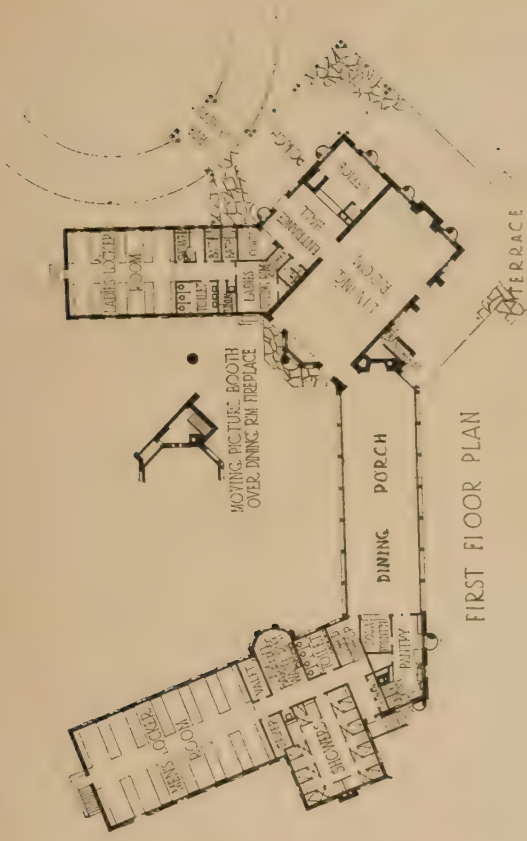




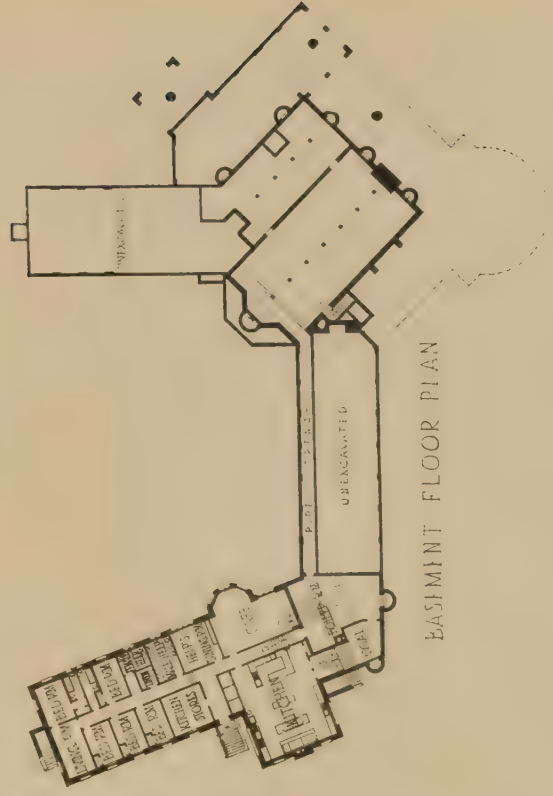
Garden surrounded by ladies' locker-room, and rustic porch happily tying in with conventional architecture.



The dining room going back to nature, has trusses of rustic logs cut from the woods in the vicinity.



NORWOOD GOLF CLUB, LONG BRANCH, N. J.  
Harry Allan Jacobs, Architect



NORWOOD GOLF CLUB, LONG BRANCH, N. J.

Harry Allan Jacobs, Architect.







SOUTH HILLS COUNTRY CLUB, PITTSBURGH, PA.

Ernest Wilson Boyer, Architect.







FACING PRACTICE PUTTING-GREEN.



LIVING-ROOM AND BALLROOM.

SOUTH HILLS COUNTRY CLUB, PITTSBURGH, PA.

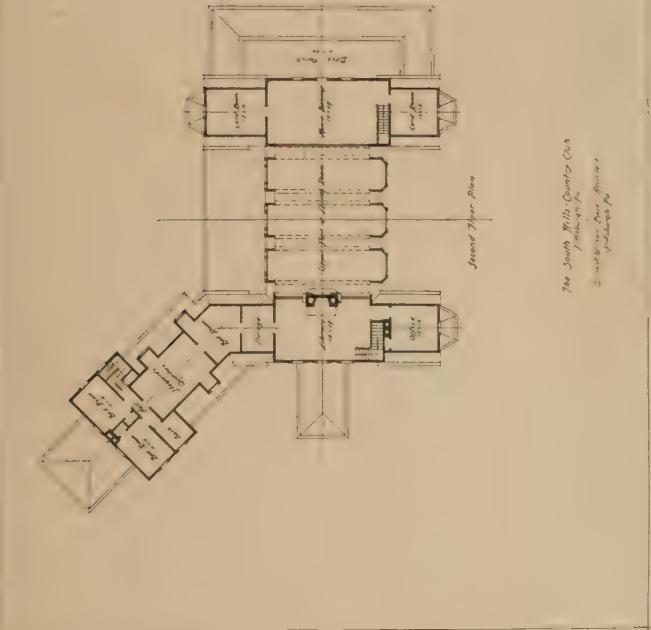
Ernest Wilson Boyer, Architect.



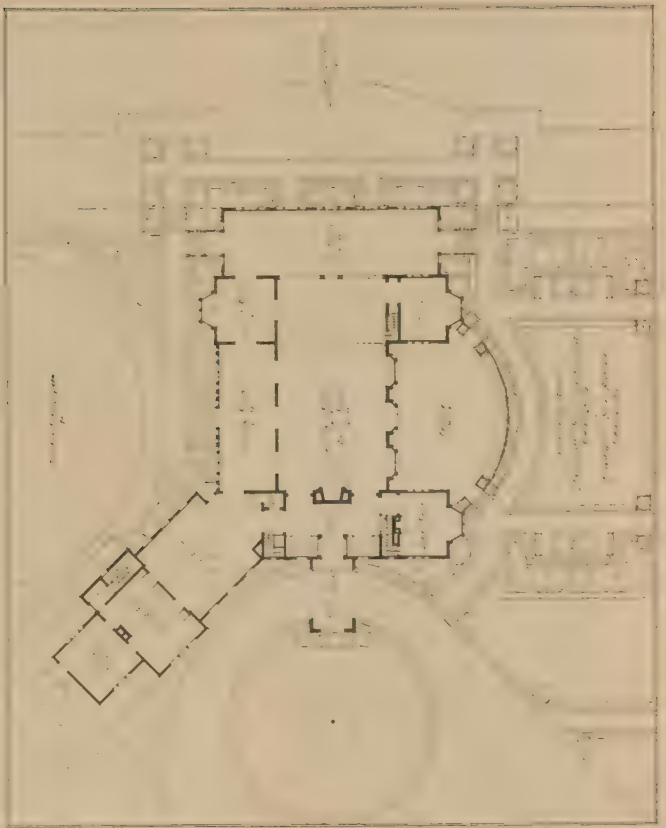




SUN PORCH.



SOUTH HILLS COUNTRY CLUB, PITTSBURGH, PA.



Ernest Wilson Boyer, Architect.







MONTCLAIR ATHLETIC CLUB, MONTCLAIR, N. J.

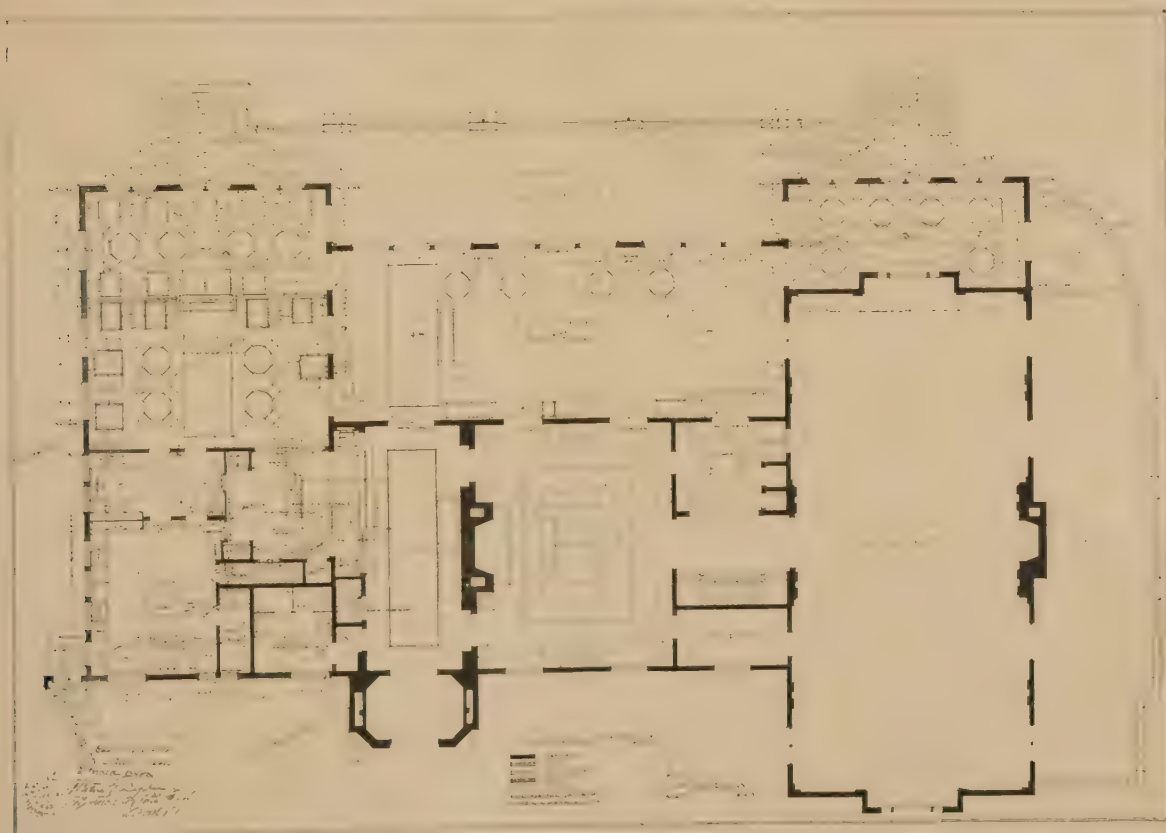
C. C. Wendehack, Architect.







SUN PORCH.



FIRST-FLOOR PLAN.

MONTCLAIR ATHLETIC CLUB, MONTCLAIR, N. J.

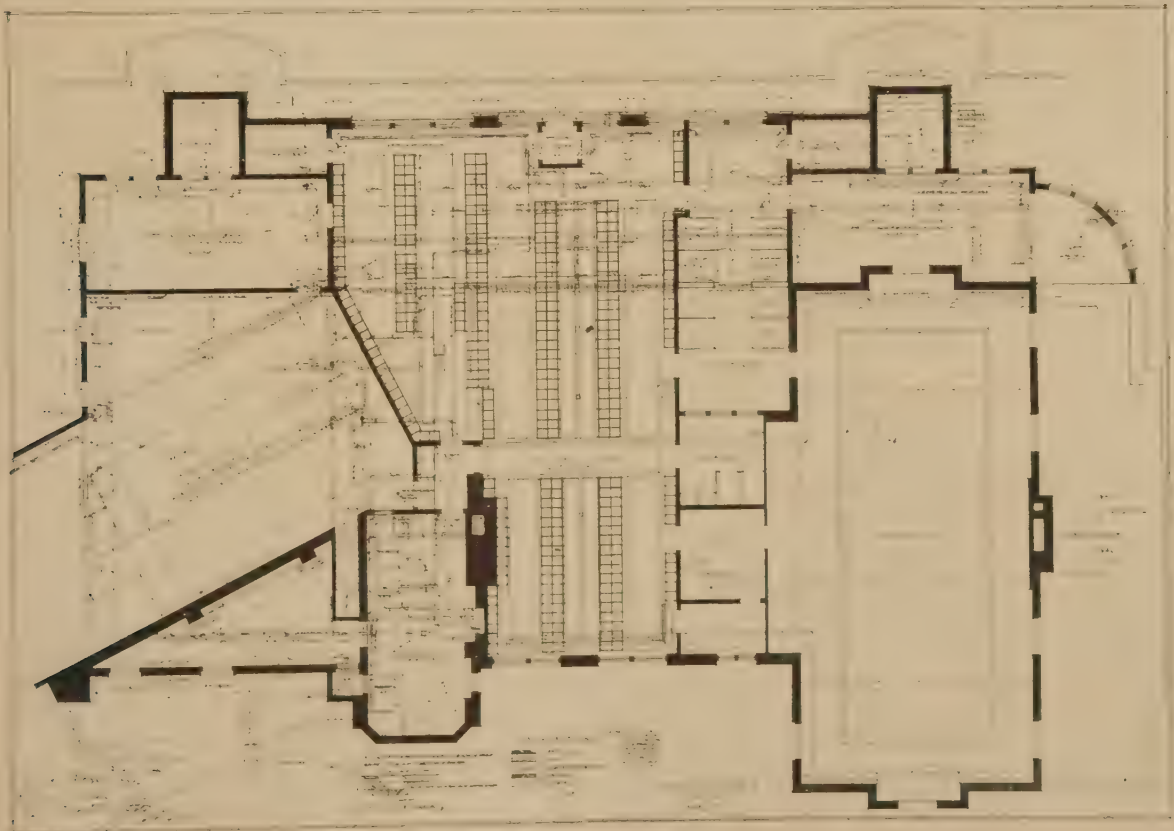
C. C. Wendehack, Architect.







EAST ELEVATION.



BASEMENT PLAN, MONTCLAIR ATHLETIC CLUB, MONTCLAIR, N. J.

C. C. Wendehack, Architect.







HOUSE, MRS. LYDIG HOYT, WOODBURY, LONG ISLAND. ("MULBERRY CORNER," BUILT 1735.)

Remodelled by Delano & Aldrich, Architects.







DETAIL.

HOUSE, MRS. LYDIG HOYT, WOODBURY, LONG ISLAND.

("MULBERRY CORNER," BUILT 1735.)



HALL AND STAIRWAY.

Remodelled by Delano & Aldrich, Architects.







LIVING-ROOM.



DRESSING-ROOM.

Remodelled by Delano & Aldrich, Architects.

HOUSE, MRS. LYDIG HOYT, WOODBURY, LONG ISLAND. "MULBERRY CORNER," BUILT 1735.)







SITTING ROOM.



DINING-ROOM.



DINING-ROOM.



DINING-ROOM.

HOUSE, MRS. LYDIE HOYT, WOODBURY, LONG ISLAND. (MULBERRY CORNER, BUILT 1735.)  
Remodelled by Delano & Aldrich., Architects

# Nicolas Lavreince (1737-1807)

By Henry Coleman May

"EVERY man is not born in his own country" is a Persian saying which defines those special mentalities whose "patrie intellectuelle" lies beyond the confines of their native land.

It is, of course, the most comprehensible thing in the world that certain individuals should possess temperaments corresponding more exactly to a civilization other than their own, and whose capabilities and tastes expand only in the atmosphere suitable to their development. The average American thinks it more or less monstrous that any of his compatriots should elect to live abroad, although he considers it perfectly natural and proper that foreigners should forsake their own homes in order to transplant themselves to these shores. Luckily this limited comprehension has never existed in Europe, and a lack of fundamental patriotism is rarely presupposed in those who are impelled to seek new horizons.

In the eighteenth century France and Italy were the centres to which the intellectuals and artists of the time were irresistibly drawn. Rome was full of Englishmen, while northern Europeans eagerly sought the refinements of a more developed "esprit" in the varied centres of Parisian society.

Not all of these travellers were "grands seigneurs" or younger sons. Maurice de Saxe and the romantic Count Fersen did not represent the only class whose duty or inclination led them to the banks of the Seine. From Holland, Germany, and Sweden came great numbers of obscure artists and artisans, attracted by the culture and luxury of the French capital. Many of them succeeded notably in the lines of their endeavor, and, which is much more interesting and unexpected, several of these foreigners, imbued with the soul of their new surroundings, have come to represent in their work the very essence of French taste. The names of Oeben, Slotdz, Reisener, Schwerdfeger, and Roentgen could never be mistaken for Gallic ones, and yet their creations are French to an extreme degree.

To Paris from the snows of Stockholm, over which Gustavus III was casting the exotic light of his brilliant and curious court, came a young and totally unknown Swede, Nicolas Lafrensen by name.

Born in October, 1737, he seems to have left his native land toward his nineteenth year. His early efforts remain up to the present unknown, as apparently no documents exist relating to this first period of his career.

It was not extraordinary that the desire for Paris should be born in a Swede of artistic tendencies. Thanks primarily to the activities of Count Tessin, ambassador to the court of Louis XV, Stockholm was becoming imbued with French culture. We see to-day evidences of this throughout the entire country, and in the capital itself there are many masterpieces of French art, in painting, sculpture, and decoration, dating from the middle period of the eighteenth century. Lavreince remained in France until just before the outbreak of the Revolution, when he returned to Sweden, dying in Stockholm on December 6, 1807.

His art belongs to that class produced for the "fermiers

généraux," and which, with the downfall of the ancient régime, disappeared with its patrons. His paintings are now dispersed in various collections. In the museum at Stockholm there are three gouaches, two representing genre subjects in seventeenth-century costume, quite unlike his more familiar style and which probably antedate his Parisian manner. In 1899, twenty original pictures, having belonged to the celebrated Mühlbacher collection, were sold in Paris, two of which, the pair of



"L'Assemblée au concert."

famous "Assemblées," are among his most important. There are sixty-three known engravings after paintings by Lavreince, and, besides this number, ten others can be practically positively attributed to the Swedish artist, although, principally on account of their somewhat "risqué" character, these latter remained unsigned. Some of the last are not only very well known, but much sought after, such as, for instance, the delightful compositions entitled "Le Joli Chien" and "Si tu Voulais."

Lavreince did not confine himself entirely to interiors. At least two portraits are due to his brush; one of Gustavus III, the other a likeness of the Baron de Staël, the husband of the famous authoress whom Napoleon so cordially detested. He left several out-of-door scenes, two of which were popularized through their engravers, "La Promenade du Bois de Vincennes" and "Le Mercure de France," both of these showing contemporary scenes. "La Balançoire Mystérieuse" and "Les Nymphes Scrupuleuses" are examples of the nude among sylvan surroundings, and I believe his only two specimens in this style.

From time to time drawings and paintings, miniatures as well as lacquer and gold snuff-boxes enriched with designs by Lavreince, have appeared in the salesrooms. Several col-





"Le restaurant."

lections can boast of possessing authentic gouaches and sepias, the best known having been among those accumulated by the late Edmond de Goncourt, Baron Pichon, and the Baron E. de Rothschild.

It was inevitable that Lavreince should attempt to use his art for the illustrating of popular fiction. Two drawings of his represent episodes from that most remarkable, pernicious and brilliant novel, "*Les Liaisons Dangereuses*," a book terrifying and enthralling in its cynicism and elegance and strangely compelling in the realism of its analysis. The characters of this story seem to have exerted a fascination over illustrators from Lavreince down to Aubrey Beardsley, whose sinister delineation of the Vicomte de Valmont has nothing in common with eighteenth-century portrayals of that corrupt though charming personage.

During the decade before France was plunged into the vortex of chaos and disruption, Lavreince's work, by that time thoroughly French in conception and technic, became extremely popular. His usual medium was water-color and gouache, and his pictures, for which there was an instant and unceasing demand, were at once engraved by such masters of the "burin" as de Launay, Hemlan, Dequevauviller, and the aquatintist Janinet. His drawings were by this method immediately popularized, and there is no one, with the notable exception of Moreau le Jeune, whose plates are more descriptive of rakish or aristocratic circles within Parisian society.

Lavreince, to use the Gallicized spelling under which his name became and has remained known, possessed that subtle quality so wholly French, which can only be described by a totally inadequate word known as "chic." In our own day we find this note in the drawings of Helleu and of Drian; in an earlier period we see it in canvases of a great master such as Fragonard, or in the delightful render-

ings of eighteenth-century life which Baudoin and Longhi have bequeathed to posterity. It is that quality which comes from an affined feeling for "nuance" and attitude, for just the necessary restraint and exactness of line. It is in the knowledge of the proper accessories, the background that is precisely right, the arrangement which precludes a bourgeois suggestion. The touch is light, the mentality a result of those indefinable essences which seem to have come down to its interpreters from Watteau's astonishing sketches. Majesty and prestige, elegance even, existed before, but "chic" was invented in the seventeen hundreds.

To the student of history and of manners, Lavreince offers an invaluable source of documentation. Many of his pages show purely imaginary scenes, such as his famous ones, familiar to all and so brilliantly engraved by Janinet, "*l'Indiscretion*," with "*La Comparaison*" and "*l'Aveu Difficile*," but there are other drawings depicting actual places. The first of that celebrated pair "*l'Assemblée au Salon*" and "*l'Assemblée au Concert*" (engraved by Dequevauviller) represents a room in the Paris House of the Duc de Luynes. To the architect the appeal is immediate and evident. Here we have the society of the time framed with interiors resulting from the newly developed classic revival. In all Lavreince's work not even a suggestion of the rococo remains; his backgrounds, the furniture introduced, are all what we call purely "Louis-Seize." The greater number show rooms of simple design, eminently suitable for modern adaptation, and in studying his pictures we can form a very accurate idea of the average eighteenth-century interior.

Let us consider these compositions purely from the point of view of their architectural value as applied to interiors, and we will see that even from this, their perhaps



"La soubrette confidante."



less important side, we have before us invaluable documents, full of inspiration and suggestion.

In "l'Indiscrétion" we find a bed, surmounted by a blue-green canopy in a semicircular alcove, the walls of which are treated with pilasters. The gilded furniture, covered with sapphire-blue velvet, blends harmoniously with the whites, pale water-greens, and salmon color of the two women's dresses. The two companion pieces, "l'Aveu Difficile" and "La Comparaison," delicate in coloring and delightful in composition and rendering, possess no real architectural features.

"Les Offres Séduisantes" shows a small Louis XVI room, far more suitable as a boudoir than the man's writing-room it is supposed to represent. The walls, uniformly panelled, are sparingly treated with garlands of flowers in low relief. The window embrasure is deep, with its thin silk curtains drawn completely aside to admit as much light as possible, a fashion which could be copied to advantage in most American houses where windows are, as a rule, swathed in illogical coverings, thereby at once defeating their object.

"Le Restaurant" depicts a scene which comes under the heading of "sujets galants." Here the surroundings are more voluptuous than in the preceding pictures, and the alcove, in which is placed a deep sofa of typical Louis XVI design, is hung with a somewhat complicated though highly effective drapery whose graceful folds are light enough to prevent an impression of stuffiness. A pleasing note, carrying out a scheme of occult balance, is the introduction on one side of the alcove, behind the sofa, of a niche in which is placed an urn on a pedestal—most probably a "calorifère," another suggestion which might be followed in our day of disfiguring heaters and radiators. In "l'Assemblée au Concert" we have a background eminently suitable for a dining as well as a music room. The stove in the centre is of the most decorative kind possible and could be very logically used in modern rooms where heating apparatus is always unavoidable and a fireplace sometimes superfluous. Its companion piece shows a "grand salon," with splendidly large windows, the general scheme being very much the same as that shown in "Le Billet Doux." This, with its "pendant," "qu'en dit l'Abbé," is a composition of such wide-spread popularity that any description would seem superfluous. The four above-named pictures, with "l'Heureux Moment" and "La Consolation de l'Absence" form an epitome of luxury and taste, combined with great richness of decoration. In many others of Lavreince's compositions we see rooms of a far simpler character. Such, for instance, is that in "l'Ecole de Danse" where the entire effect is made by the happy proportions of the very simple panelling and the generous size of the doors and windows. In "La Sou-

brette Confidente" and "La Leçon Interrompue" the walls are simply covered with a uniform material on which hang a few paintings, while the door is surmounted by a decorative "grisaille."

Perhaps the severest criticism of Lavreince might be made on the score of his lack of versatility, but it is probably just because of this limitation that he is so descriptive within his particular province. His world is that of the drawing-room, of the boudoir, of the discreet salons where lovers meet their mistresses; he leaves these places only to visit the airy ateliers where dancing-lessons are given, or the lively bedrooms of light-hearted damsels. His tact and

his taste are certain, his interpretation thoroughly disarming. In him we cannot expect to find the mastery which pervades Watteau's drawings, the astonishing virtuosity of Boucher's designs, or even the prodigious invention displayed throughout Eisen's work. We must think of Lavreince only within his sphere, and we are not comparing him with the real masters of the epoch. He is admittedly less facile than Baudoin; his line is not as unerring, as triumphant as Moreau's, but he possesses a certain limpid quality which makes him perhaps the most charming of all the contemporary "petits-maitres."

It cannot be denied that the artist's work gains sometimes when translated onto copper, but this is true of almost all eighteenth-century art of this class, so supreme was the skill of their engravers.

Mr. H. W. Lawrence in his brilliant and sumptuous work on French engravers says:

"... Lavreince painted in Gouache and in transparent color with remarkable skill, but de Launay has introduced into his work an airiness which is absent in the opaque medium and he has thus arrived at more pleasing effects than is shown in many of the original drawings." Nevertheless, it is their originator to whom we are indebted for these fascinating glimpses of Parisian eighteenth-century life with all its charm and refinement. Lavreince shows us the interiors of those houses of which Hubert Robert painted the gardens and pavilions. We can imagine his frivolous young women leaving their rooms to wander about in the company of a gallant, under the shade of propitious "bosquets," seating themselves perhaps at the foot of a sphinx, whose smiling head, after the likeness of Madame de Pompadour, emerges from a sombre mass of leaves starred with pale blossoms. Everywhere there is a quiet gaiety, that "Dolce far niente" which, instead of going into nothing, culminated, alas, into the most terrible of storms. In the meantime, only music was heard in the distance, blending with the sound of subdued cascades, while within, perfumes from priceless cassolettes ascended calmly in spirals of scented smoke into the expectant air.



"Le billet doux."



# New Housing Project for the Metropolitan Life Insurance Company, New York

Andrew J. Thomas and D. Everett Waid, Associate Architects



**T**HIS housing project of the Metropolitan Life Insurance Company marks the beginning, we hope, of a new era in the architecture of American housing. It promises to create a new standard in multifamily housing. What this means to the dwellers of our crowded cities may be realized by comparing it with the standards which have been established in the housing of individual dwellings in small towns and suburbs.

The last thirty years have seen a wonderful progress in small-town housing, and the American who lives in the small house of the best type enjoys in comfort and convenience by far the highest standard of living in the world.

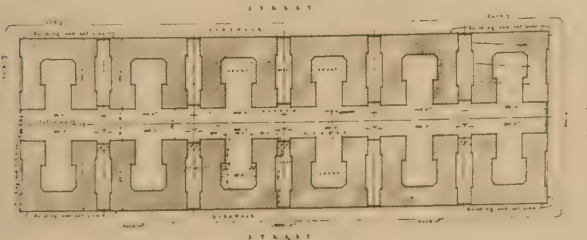
But his city brother has not been nearly so well off. Hasty speculative methods of building characterized by the unenlightened copying of out-of-date models have blocked any real improvement up to a few years ago. Since the war progress has been more rapid, and now the Metropolitan Life Insurance Company has taken advantage of recent improvements to bring out this new model housing.

There are necessarily many sides to such a vast project, with its countless technical ramifications, but the appeal for

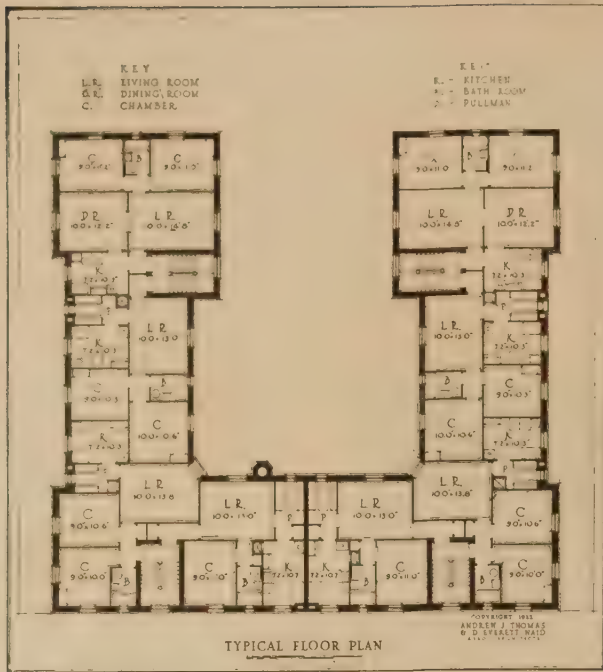
The economics which have been worked out in the design are extraordinary, extending from the main essentials down to the smallest details of architecture. More than anything else, it is the vast scale of the operation which creates the biggest savings. The benefits of large-scale operation and organization are just as great in housing as in any other form of production. They extend to design and construction, the buying of materials, the systematizing of erection, and—equally important—to maintenance and operation of the houses after they are completed. The design of these apartment-houses has been worked out to establish the maximum economy in all respects.

In these economics, the repetition of the one unit fifty times permits the design of that unit to be perfected with infinite pains, in a manner which would not be possible because too expensive if a single unit only were to be built. Every possible saving, large or small, has been made through intensive study of the design on the part of Mr. Thomas and Mr. Waid, with the help of expert building technicians and housing experts whom they have consulted, and will be repeated fifty times and its cost distributed over fifty buildings. Concentration of space, compactness of details, the splendid openness of the plan, the careful consideration of every brick and every piece of timber and trim, the use of stock details, and the careful working out of the mechanical features of heating, plumbing, and electricity, where every foot of piping and each valve has been calculated as to cost and efficiency—these are only a few of the advantages created. As examples, the excavation work has been almost eliminated by placing the heating plant along the fronts of the building, requiring only one long trench on each street, which is made by a steam-shovel. Windows are generally of one size.

Great as these benefits are, however, they are not so important as those advantages gained by big-scale planning of the city block as a whole—the highest point which housing economics can reach.



the public, as well as the professional housing experts, will lay in the practical sides. The vastness of the scale of the operation is shown by the fact that it comprises 50 buildings, each housing 39 families, a total of 1,950 families, occupying 8,250 rooms.



Because of this concentration of space, with its absolute elimination of non-rent-paying space in the form of public corridors, in the apartments themselves the plan of the buildings has been opened up to give the maximum of sunshine, of circulation of air, and of cheerful outlook. Each unit stands free, as the picture shows, dividing the usual solid street wall into twelve buildings, housing thirty-nine families each. Together they occupy approximately only 50 per cent of the area of the block. This type of design, together with the U-shaped plan of each unit, makes possible three great features. The first of these is the great interior garden, about 36 feet wide and 600 feet long, extending through the centre block, affording a beautiful outlook over green lawns and planting. This garden is infinitely preferable to the hot, dirty, and noisy street. Second is the series of twelve U-shaped courts, opening into this great garden and thereby creating cross-gardens, so to speak, each about 154 feet by 40 feet at the widest point. And, thirdly, there are the passageways between buildings at intervals of 100 feet into the interior garden. These passageways have several advantages. Together with the courts, they bring outside light into the buildings and they add a large number of corner bedrooms and create splendid cross-ventilation in the individual apartments. They permit the fire-escapes—those disfiguring features which encroach on the sidewalks and ruin the appearance of New York City streets—to be placed in them, almost out of sight. Furthermore, they are important from a fire-risk standpoint, because they cut down the risk by breaking up the solid building mass along the street with open passages.

The remarkable openness of this arrangement of isolated buildings, with interior garden, rear courts, and side passageways, develops to the full the great principle which Mr. Thomas calls "block circulation." He first brought this idea out in two blocks of buildings, designed one at Jackson Heights for the Queensboro Corporation, and the other in a district of Brooklyn, for the City and Suburban Homes Company. Its value may be appreciated by visiting these properties, particularly the Jackson Heights group. There any one, standing in the interior garden on a day

without any wind, will be astonished at the steady current of air circulating through the passages between the buildings.

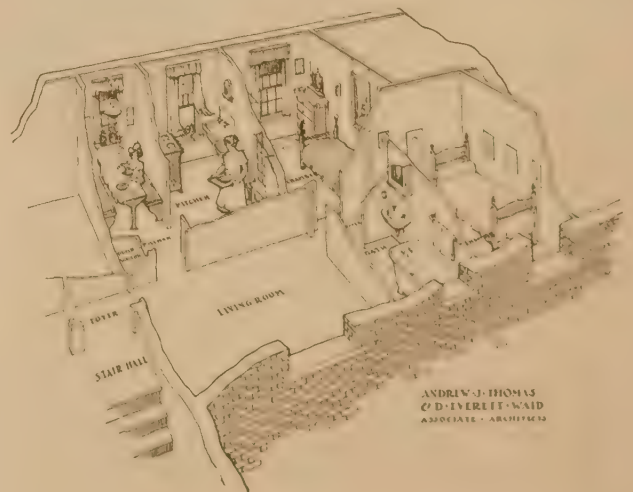
The value of this plan to the individual tenant is easily seen. To begin with, one apartment is as good as another.

The cheerfulness and homelike character and the outlook and outdoor air and sunshine were, as explained above, paramount. Every apartment has perfect cross-ventilation and corner rooms are frequent on the plan. There are always two and sometimes three exposures to each apartment, like a country house. When it came to the domestic arrangements, the architects realized that the one to consult was not alone the expert, but the housewife herself, who could count better than any one else the steps saved in performing her housework and the time she economized. The plans were passed upon by ladies expert in this type of work, who had carefully investigated the actual working-out of the arrangements of the model tenements and had discovered that the women who lived in them were much dissatisfied with many of the living arrangements. Particularly they found much complaint over the combination of living-room and kitchen into one room, as adding immensely to their work and interfering with their privacy.

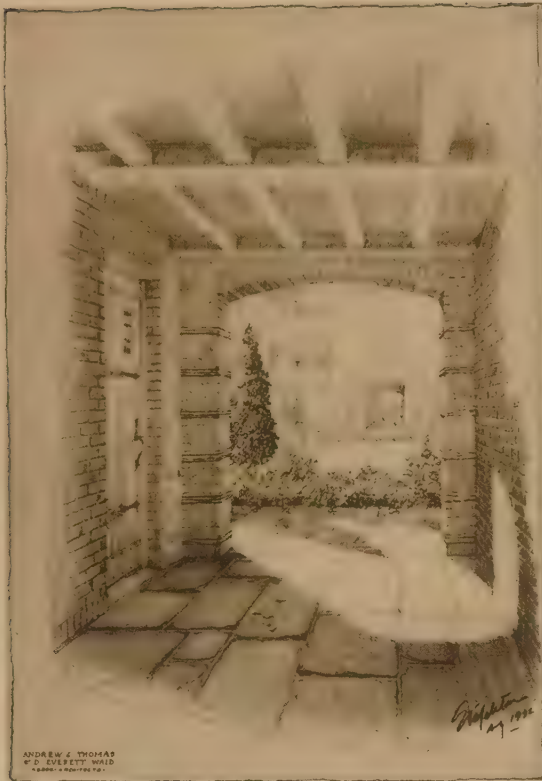
The typical arrangement is shown in the little perspective of an apartment interior. It shows a triple division of each apartment into living-room, kitchen, and dining facilities, and bedroom portions—an aid both to operation and to privacy. There are only two apartments to a stair-hall, aiding further to the privacy of the plan, and each living-room is separated from the hall by a little foyer. The kitchen part is separated from the living-room, and contains the latest improvements in domestic equipment. A gas cooking-range with hood; a sink and two wash-tubs with white enamelled metal cover, hinged to swing up against the wall when the tubs are in use, and serving as a drain-board for the sink at other times; a dresser, a refrigerator, and a dumbwaiter are the principal features. All is arranged to save the housewife steps, and a little space is provided, screened off from the rest of the kitchen, for eating.

The chambers, together with the bathroom, are screened off from the living-room. All the interior details are simple but in good architectural taste. The rooms are of good size for this type of work, well above the minimum sizes allowed by law.

Still another great advance in living standards is the mechanical features. Although steam heat, hot water, and electricity are not usually provided at these rentals, they could be included in the plan because of the savings made







in other ways. What this means in the economics of the single family may be realized that only a little more than two tons of coal will be required to heat one apartment, as compared with six or more tons needed to heat the five-room individual dwelling.

This is a splendid beginning and gives promise of a development that will put an end to the intolerable conditions that have so long prevailed.

The Committee on Housing of the Women's City Club of New York recently made an appeal to those in authority and all public-spirited citizens to waken to the real dangers

of the present condition. Under the guise of the poor man's need of a home and inability to pay high rent, standards which have taken years of right effort to erect are being broken down and bad-type tenements are being built which, following the old dumb-bell form, provide insufficient light and air for most of the rooms, and no privacy. No attention is given to sane city planning in the new sections, and the result must be future slums.

If new energetic attention is given to this problem a new and beautiful city will grow up in these new districts. This is economically possible.

## A Helpful Building and Housing Service

FOR several years there has been developing a feeling that some agency of the federal government should interest itself in building and housing. The Congress of the United States made an appropriation for such activities for the year 1921-1922. The Act appropriating the funds says, among other things, "That as much of this sum as necessary shall be used to collect and disseminate such scientific, practical, and statistical information as may be procured, showing or tending to show approved methods in building, planning, and construction, standardization, and adaptability of structural units, including building materials, and codes, economy in the manufacture and utilization of building materials and supplies, and such other matters as may tend to encourage, improve, and cheapen construction and housing."

Accordingly, Secretary Hoover created the Division of Building and Housing, which co-operates with all groups interested in housing and construction, such as architects, builders, building material producers and dealers, building

trades labor, contractors, builders' exchanges, realtors, building and loan associations, building inspectors, city officials, and others.

The Division has helped local communities in successfully solving their housing problems. It collects and publishes monthly prices of twenty-four items of building materials as paid by contractors in different cities. It also makes reports on building activity, such as building permits and contracts awarded, and on general building and housing conditions in the country.

Mr. Hoover has appointed two main committees which co-operate with the Division of Building and Housing. The Advisory Committee on Building Codes, with a Subcommittee on Plumbing, is drafting minimum code requirements for building construction. The Advisory Committee on Zoning is making studies of State enabling acts and zoning ordinances. Its reports should be of distinct aid to communities interested in the promotion of the public welfare and the protection of property values.

# Construction of the Small House

*By H. Vandervoort Walsh*

Instructor, Columbia University School of Architecture

## ARTICLE XX

### TRADITIONS OF BUILDING FROM WHICH OUR MODERN METHODS ARE DERIVED

#### IMPORTANCE OF TRADITION

THE art of building has grown by evolution, like other things in this world. The carpenter who builds in wood to-day builds according to certain customs which come down to him from centuries of carpenters. Modern methods of constructing the small house have all human history for their background. When we speak of modern methods, we merely refer to those which are used at this time, as they have evolved from past experience and been considered satisfactory. To hear some architects and builders talk, one would think that modern America had the monopoly on good construction, and that our system of building was newly invented. How often have we heard remarks like the following from the self-styled practical man: "The genius of the present age is eminently practical, and constructive. Improvements of every kind, and ingenious contrivances for easily effecting results, which in past ages were only accomplished by slow laborious effort . . . . . etc."

But they were saying this kind of thing in 1858, for the above is quoted from a book of this date, so that even the practical man is traditional in his remarks about building.

There are also too many young men to-day wasting their time discovering what they think are new ways of building, but which have been known for centuries and discarded as unsatisfactory. If they would only study what had already been done, they would save themselves a lot of trouble.

#### STYLES OF DESIGN CHANGE, BUT CONSTRUCTION THE SAME

The styles in designing houses may change from year to year, or more likely from generation to generation, but the methods of building and the traditions in back of them continue on, with only slight changes which mark the evolution of the art. In as brief a period as we have had in this country to produce domestic architecture, we can notice very distinct styles of design, but running through them all are similar ways of building. Our earliest Colonial houses were built according to traditions brought over from England. These traditions in turn had deep roots in Europe, back to primitive days, when houses were not much more than temporary, movable shacks.

There is, however, one general trend through which building methods seem to pass. First, we have rather heavy, clumsy ways of building; this is followed by a long period of experimental cutting down of the materials of construction and standardization of parts; following this comes the stage of extreme lightness of construction, when the builders go as near the limit of safety as possible, and then accidents occur which tend to discredit the system, and decay sets in.

The early English houses were built of heavy oak-trees. Later half-timber houses used smaller structural members and more standard sizes. These traditions were brought to this country, but it was soon found that heavy oak was not necessary for their stability, but that some of the native

soft woods would answer the purpose. The thinning-down process continued, until we developed the frame dwelling of balloon construction which is practically built of 2 x 4 pieces throughout.

We are now having a building code formulated by the United States Department of Commerce which is intended to establish the minimum requirements for small-house construction, so that greatest economy of material can be secured, but also a precedent set for the minimum cutting down of material in building. In the compilation of this code this tendency to reduce the quantity of material used was very evident in the discussions which centered around the problem of whether the brick walls for small houses should be 12 or 8 inches thick. In Colonial days they thought nothing of building them 2 feet thick. To-day we hesitate at building them as thick as 12 inches. In fact, our building codes show no uniformity of opinion on the matter, and our experts disagree. The preliminary form of the above-mentioned code has settled upon an 8-inch thickness for walls not exceeding 30 feet, and made additional allowance for an extra 5 feet in height on the gable end of the building.

The process of thinning down is still going on, as this indicates.

The illustration representing briefly the historical progress of styles in domestic architecture in the United States is given to show how these styles have varied, and impress the reader with the rather constant undercurrent of construction methods throughout these changes.

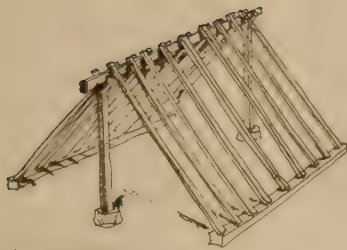
In the early Colonial houses the wooden frames were built of heavy oak timbers which were hewn into shape and dressed down with the adz. Sometimes rafters and joists were sawn, and the further along we progress in time the more we find the saw being used.

If we now jump to the period between 1865 and 1889, we find that the awful atrocities of architecture were being built in the East with similar heavy frames, although slightly less massive. Where tradition was less strong in the West, the balloon frame had grown up, but during the same period houses of equally bad design were built with one or the other systems, showing that the system of construction had very little to do with the style of architecture. Even consider the variety of styles used in modern domestic work, and then realize that all of these different types of buildings are built much in the same way. Good design has apparently little relation to good construction, although good design is improved when it expresses the construction. We often see very beautiful houses set up for moving-picture plays, but these are built of flimsy stage scenery. We have also seen very ugly houses which make us curse the builder for having built them so well.

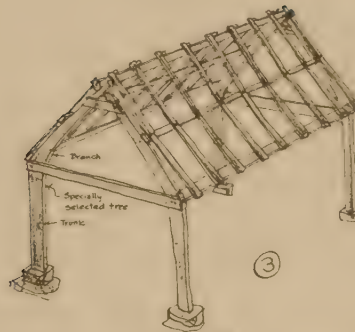
#### FUNDAMENTAL BUILDING TRADITIONS INHERITED FROM ENGLAND

It is from England that we have inherited most of our building traditions of domestic work. The earliest methods of constructing a home were much the same for all Euro-

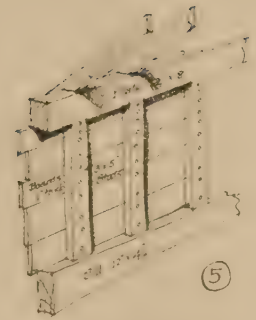




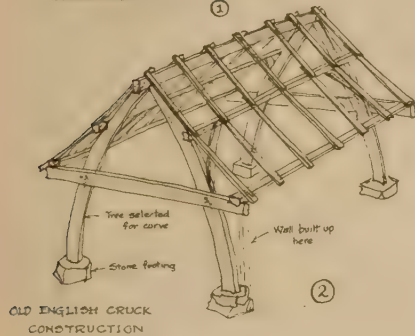
PRIMITIVE TYPE



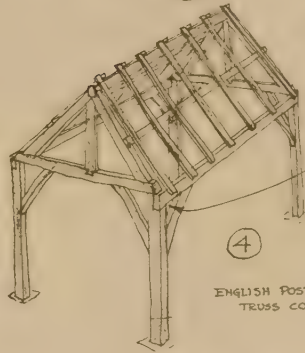
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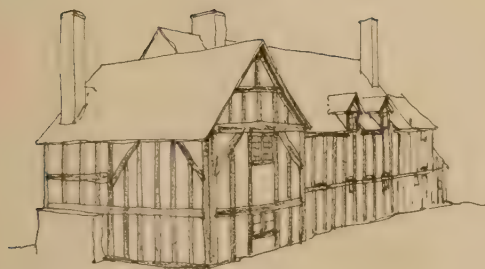
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OLD ENGLISH CRUCK CONSTRUCTION



ENGLISH POST & TRUSS CONSTRUCTION



⑥  
ENGLISH HALF TIMBER CONSTRUCTION



⑦  
TYPE OF FRAMING FOR COLONIAL  
OF FIRST PERIOD



⑧  
BRACED FRAME AS DEVELOPED FROM  
NEW ENGLAND COLONIAL

pean countries. Woven brushwood of the crudest sort was undoubtedly the first beginnings of domestic construction. The next step in advance was, according to a German theory, invented by a woman. It consisted of erecting leaning poles and stakes and filling the space between with inwoven wattlework. The shapes were conical, like the Indian tents, but later the gable-roof shape was adopted because of the greater interior space allowed.

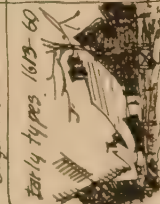













In building the gable-shaped houses the early builders used very heavy and massive construction for the ridge-pole and its support, for they believed that this upheld the rafters. This tradition was kept alive until quite recent times, but now we know that when rafters are supported at their

base, the ridge-pole practically takes none of the weight and need only be used for ease of erection.

But to our ancestors the important problem in first erecting the house was to secure the substantial support of the ridge-pole. Obviously the erection of two forked trees at either end of the ridge-pole made an excellent solution, but when the room was long, this meant that the interior had to be cluttered up with interior posts. We find then that one of the primitive methods in England of eliminating the interior posts was the adoption of the cruck system of construction which is shown in Fig. 2. By selecting two bent trees and placing them together in a shape like a wishbone, the ridge-pole could be well supported without interior

## AMERICAN DOMESTIC

## 'COLONIAL ARCHITECTURE

DUTCH	ENGLISH	ENGLISH, SWEDISH, GERMAN	ENGLISH
Locality Valley of Hudson, Long Island, North- east New Jersey, in Bergen Co. & Essex Co.	Locality In New England States	Locality Middle States, like Pennsylvania, West New Jersey & Delaware	Locality Southern States
Early types 1613-60 	Early types 1650-1700 	Early types - 1700 	Early types - 1630 
Later types 1717  	 	 	 
New England gambrel type			
GEORGIAN PERIOD OF COLONIAL			
Phase A-1725-1745	Classical symmetry, formality, heavy and clumsy detail		
Phase B-1745-1780	More refined in detail, Palladian windows, straight line predominates		
Phase C-1780-1785	Extreme delicacy of detail, similar to Adam's style in England.		
			

## AMERICAN DOMESTIC

## CLASSIC OR GREEK REVIVAL

1785



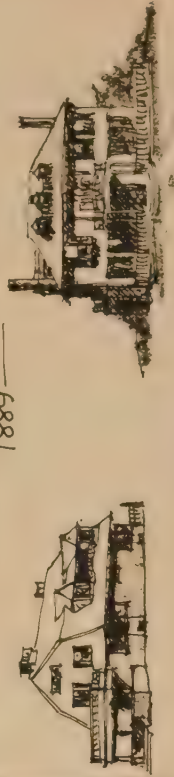
## DARK AGE OF ARCHITECTURE

1865



## PERIOD OF AWAKENING

1889





columns. By placing cross-tie beams on these bent trees and extending them outward, the plates for supporting the lower ends of the rafters could be held in position. This permitted the carpenters to erect the exterior walls independently of the roof, a thing which they seem to have desired.

There is another variation of the above method of supporting the ridge-pole, and that is shown in Fig. 3. Instead of selecting a bent tree, one was secured which was upright for a certain height, and then which bent to one side with a branch. By placing two of these trees together, a perfect end was formed for the house. However, this was not a very good type, since it meant the selecting of very unusual-shaped trees.

For this reason, the system of post-and-truss construction which is shown in Fig. 4 was the natural outcome of the above. Diagonal bracing at the corners evidently was found to be useful in resisting high wind-storms, and it was usually employed.

There apparently remained a distrust of masonry walls among the carpenters, for they continued to support the roofs entirely upon heavy timber framing, and records show that the exterior walls were built up after the roof-framing had been completed. There are evidences that the early types of walls, after the primitive woven brushwood walls proved insecure, were made like a barricade of trees; that is, they were merely a continuous line of vertically placed tree-trunks. This, of course, was a ruinously expensive type of wall when timber became scarce, and it is no wonder that it grew to a system of construction like that shown in Fig. 5. Even this required a good deal of wood, so that the filling of the space between the timbers rather logically became masonry or plaster on lath. However, the method of building shown in Fig. 5 has all of the elements of the system of construction used in framing modern exterior walls. The most important difference is in the size of the timbers used.

The half-timber construction of the Middle Ages was only the artistic treatment of this crude system of building.

In drawing number 6 is a very simple half-timber house which shows practically no attempt at all to decorate. The construction is perfectly evident, and there are no curves and carving used to ornament the building, as can be seen on some of the more elaborate houses of the cities. This simple building system was the traditional background of the English carpenter, and it is not at all extraordinary

that he brought his methods of building over to this country.

Even the custom of calling in the neighbors and feasting them when a house-raising was celebrated came directly from English traditions. The old post-and-truss construction of the early English houses required framing on the ground and then lifting into position afterward. Records show that the people from the surrounding countryside were called in to help, and their wages of hire were paid by the house-owner with a huge feast. In early Colonial days the nearest neighbors were likewise called in to help raise the frame, and the host was supposed to feed the gathering, after the work was finished, and make a jolly party of eating and drinking—a sort of social debt, but not looked upon as wages as in older days.

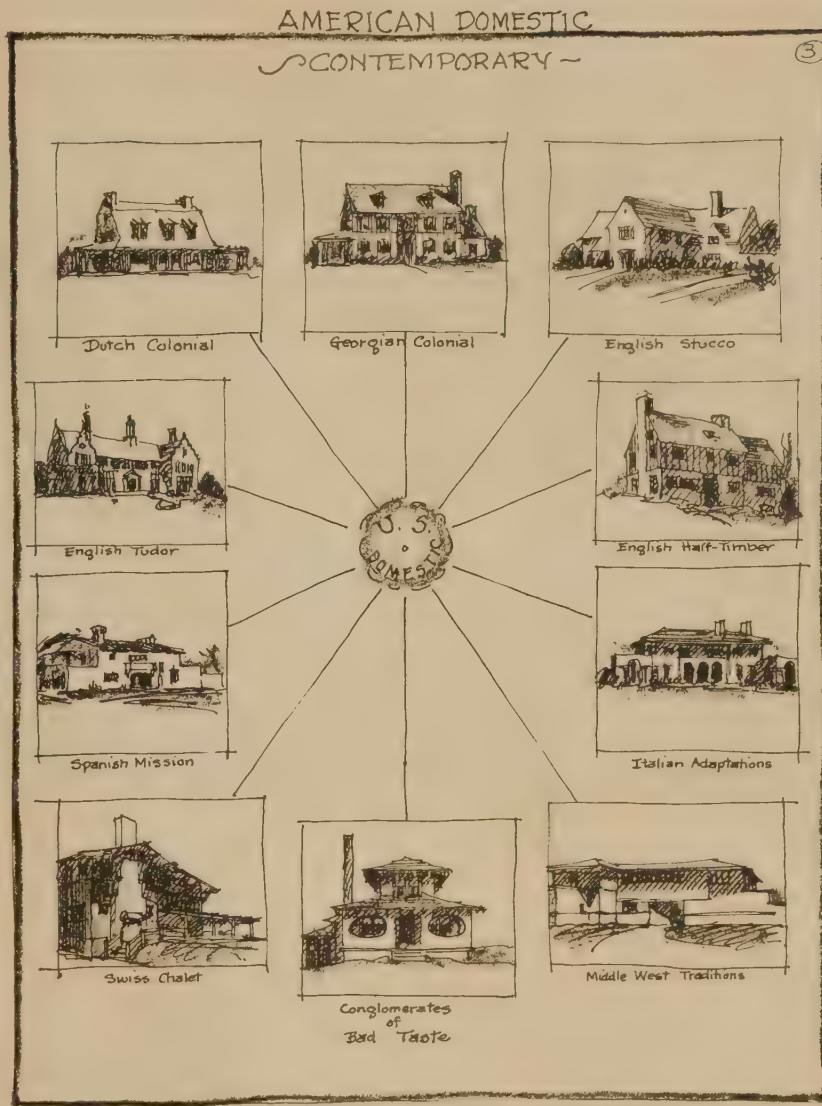
The hard climate which the earliest American colo-

nists had to face and also the abundant supply of wood which lay at their very doors were factors which slightly altered the traditions of building. After the house had been framed and the spaces between the timbers filled with plaster or masonry, the exterior was covered over with clapboards or shingles as an extra covering against the weather. The use of clapboards or shingles as an exterior covering of course was not new, for many English farmhouses show that it was used in that country. But with this difference in exterior appearance, the framing underneath was the same as shown in Fig. 7.

#### REVOLT AGAINST NEW ENGLAND TRADITIONS

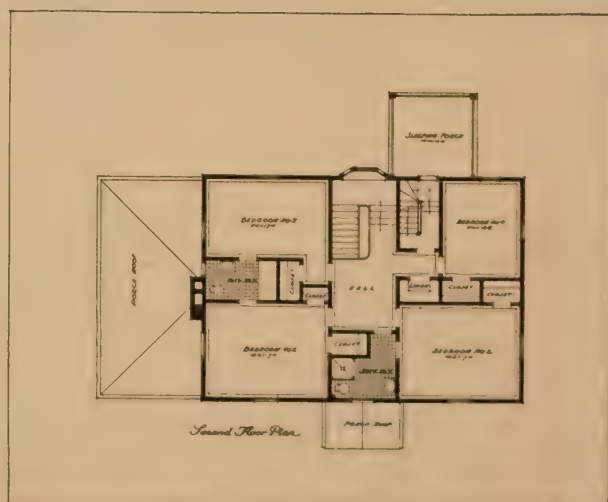
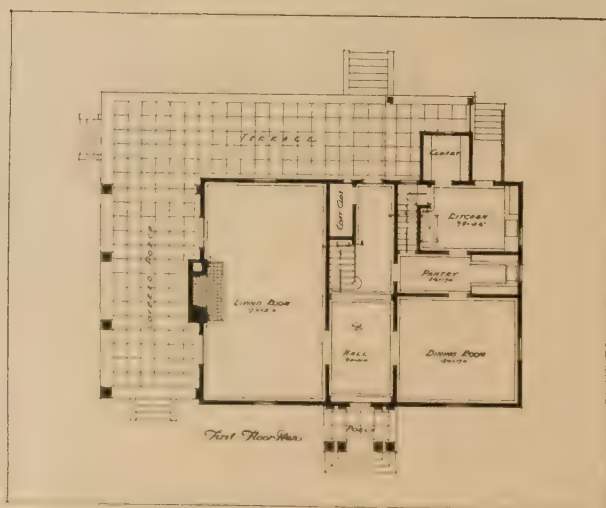
It was only a matter of time when the thinning-down process began to make itself evident in the traditions of

(Continued on page 258)





FRONT.



PLANS.

Delos H. Smith, Architect.

HOUSE, MRS. S. LAWRENCE HEAP, CHEVY CHASE, MD.





REAR OF HOUSE.



LIVING-ROOM.

HOUSE, MRS. S. LAWRENCE HEAP, CHEVY CHASE, MD.

Delos H. Smith, Architect.

(Continued from page 255)

Colonial carpentry, and from its clumsy beginnings it evolved into the more or less standard form of construction which we call the brace-frame.

The difficulty of securing good labor in the West, and also the increasing use of the power sawmill, made it possible and necessary to standardize a quick and easy method of building which would meet the great demand for houses in rapidly growing communities.

Quoting from the *New York Tribune* of January 18, 1855, we have a very interesting account of the conditions which were then prevalent that brought about this later variation of the wooden-frame structure. The conditions there described seem almost like our modern difficulties with labor and materials.

"Mr. Robinson said: . . . I would saw all my timbers for a frame house, or ordinary frame outbuilding, of the following dimensions: 2 x 8 inches; 2 x 4; 2 x 1. I have, however, built them, when I lived on the Grand Prairie of Indiana, many miles from sawmills, nearly all of split and hewed stuff, making use of rails or round poles, reduced to straight lines and even thickness on two sides, for studs and rafters. But sawed stuff is much the easiest, though in a timber country the other is far the cheapest. First, level your foundation, and lay down two of the 2 x 8 pieces, flat-wise, for side-walls. Upon these set the floor-sleepers, on edge, 32 inches apart. Fasten one at each end, and perhaps one or two in the middle, if the building is large, with a wooden pin. These end-sleepers are the end-sills. Now lay the floor, unless you design to have one that would be likely to be injured by the weather before you get on the roof. It is a great saving, though, of labor to begin at the bottom of a house and build up. In laying the floor first, you have no studs to cut and fit around, and can let your boards run out over the ends, just as it happens, and afterward saw them off smooth by the sill. Now set up a corner-post, which is nothing but one of the 2 x 4 studs, fastening the bottom by four nails; make it plumb, and stay it each way. Set another at the other corner, and then mark off your door and window places and set up the side-studs and put in the frames. Fill up with studs between, 16 inches apart, supporting the top by a line or strip of board from corner to corner, or stayed studs between. Now cover that side with rough sheathing boards, unless you intend to side-up with clapboards on the studs, which I never would do, except for a small, common building. Make no calculation about the top of your studs; wait till you get up that high. You may use them of any length, with broken or stub-shot ends, no matter. When you have got this side boarded as high as you can reach, proceed to set up another. In the meantime, other workmen can be lathing the first side. When you have got the sides all up, fix upon the height of your upper floor, and strike a line upon the studs for the under side of the joist. Cut out a joist 4 inches wide, half-inch deep, and nail on firmly one of the inch strips. Upon these strips rest the chamber floor joist. Cut out a joist 1 inch deep, in the lower edge, and lock it on the strip, and nail each joist to each stud. Now lay this floor, and go on to build the upper story, as you did the lower one; splicing on and lengthening out studs wherever needed, until you get high enough for the plate. Splice studs or joists by simply butting the ends together, and nailing strips on each side. Strike a line and saw off the top of the studs even upon each side—not the ends—and nail on one of the inch strips. That is the plate. Cut the ends of the upper joist the bevel of the pitch of the roof, and nail them fast to the plate, placing the end ones inside the studs, which you will

let run up promiscuously, to be cut off by the rafter. Now lay the garret floor by all means before you put on the roof, and you will find that you have saved 50 per cent of hard labor. The rafters, if supported so as not to be over 10 feet long, will be strong enough of the 2 x 4 stuff. Bevel the ends and nail fast to the joist. Then there is no strain upon the sides by the weight of the roof, which may be covered with shingles or other materials—the cheapest being composition or cement roofs. To make one of this kind, take soft, spongy, thick paper, and tack it upon the boards in courses like shingles. Commence at the top with hot tar and saturate the paper, upon which sift evenly fine gravel, pressing it in while hot—that is, while tar and gravel are both hot. One coat will make a tight roof; two coats will make it more durable. Put up your partitions of stuff 1 x 4, unless where you want to support the upper joist—then use stuff 2 x 4, with strips nailed on top, for the joist to rest upon, fastening altogether by nails, wherever timbers touch. Thus you will have a frame without a tenon or mortise, or brace, and yet it is far cheaper, and incalculably stronger when finished, than though it was composed of timbers 10 inches square, with a thousand auger holes and a hundred days' work with the chisel and adz, making holes and pins to fill them.

"To lay out and frame a building so that all its parts will come together requires the skill of a master mechanic, and a host of men and a deal of hard work to lift the great sticks of timber into position. To erect a balloon building requires about as much mechanical skill as it does to build a board fence. Any farmer who is handy with the saw, iron square and hammer, with one of his boys or a common laborer to assist him, can go to work and put up a frame for an outbuilding, and finish it off with his own labor, just as well as to hire a carpenter to score and hew great oak sticks and fill them full of mortises, all by the science of the 'square rule.' It is a waste of labor that we should all lend our aid to put a stop to. Besides, it will enable many a farmer to improve his place with new buildings, who, though he has long needed them, has shuddered at the thought of cutting down half of the best trees in his wood-lot, and then giving half a year's work to hauling it home and paying for what I do know is the wholly useless labor of framing. If it had not been for the knowledge of balloon frames, Chicago and San Francisco could never have arisen, as they did, from little villages to great cities in a single year. It is not alone city buildings, which are supported by one another, that may be thus erected, but those upon the open prairie, where the wind has a sweep from Mackinaw to the Mississippi, for there they are built, and stand as firm as any of the old frames of New England, with posts and beams 16 inches square."

The above address, which was delivered before the American Institute Farmers' Club, has been quoted in detail because of the interesting point of view of the days of 1855 which it reveals. When Mr. Robinson had finished there were other comments, especially one by Mr. Youmans, in which he described early conditions of building in San Francisco. He also said that he had adopted this plan of building on his farm in Saratoga County, where he found great difficulty in getting carpenters that would do as he wished. They could not give up tenons and mortises, and braces and big timbers, for the light ribs, 2 x 4 inches, of a balloon frame. Does this not remind the modern reader of comments he has heard upon all sides these days concerning labor which will not do what is wanted but insists on doing things in the old way?

Some pertinent remarks were also made by a Mr. Stillman, who testified that he had seen whole blocks of houses



built in two weeks at San Francisco, and better frames he never saw. He said they were put up a story at a time, the first two floors often being framed and sided in and lived in before the upper part of the house was up. Have we any such housing crisis as this, in these days, or did we do any quicker building of war villages than that described above?

And now we read from the Preliminary Report on the Building Code Committee of the United States Department of Commerce the crystallized tradition of this system of wooden-frame construction which was evolved so many years ago that we sometimes forget the conditions of its making:

*"Exterior Walls.*

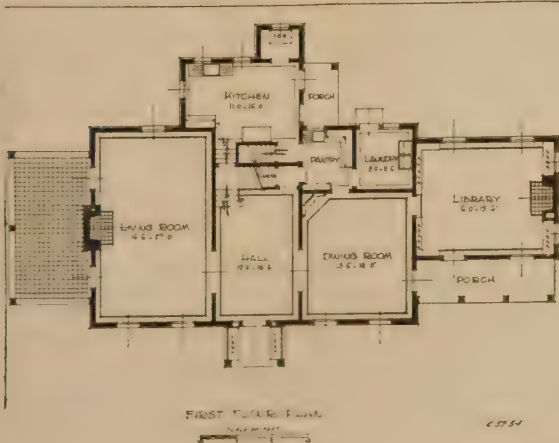
"1. Wood studding shall be 2 x 4 inches nominal size or larger and spaced not to exceed 16 inches on centres. All walls shall be securely braced at corners. The minimum

sizes specified in these requirements shall in all cases be understood as referring to nominal sizes of such timbers.

"2. Exterior walls, except those of dwellings or parts thereof not more than one-story high, shall be sheated with boards not less than  $\frac{7}{8}$ -inch thick. Sheathing boards shall be laid tight and properly nailed to each stud with not less than 2 tenpenny nails. Where the sheathing is omitted all corners shall be diagonally braced and such other measures taken to secure rigidity as may be necessary.

"3. Wood sheathing may be omitted when other types of construction are used that are proven of adequate strength and stability by tests conducted by recognized authorities.

"4. When joists are supported on ledger or ribbon boards, such boards shall not be less than 1 x 4 inches, shall be laid into the studs and securely nailed with not less than 2 nails to each stud. The floor joists shall be well spiked to the sides of the studs."



HOUSE, V. A. WILSON, TENAFLY, N. J.



R. C. Hunter & Bro., Architects.

# Concrete Construction

By DeWitt Clinton Pond, M.A.

## FIFTEENTH ARTICLE

IN the construction of the 395 Hudson Street Building there are two more items to be considered. The first is the design of the basement walls and the second is the design of the stairs. The considerations involved in basement-wall construction are those found in retaining-wall design, and, although this type of construction in theory calls for complicated formulas, actually for every-day use a very much simplified procedure is adopted.

According to the assumptions made in this procedure the earth-pressure against the wall varies directly with the depth of the wall. Earth is considered as weighing 100 pounds per cubic foot, and the horizontal pressure against the wall is taken as 30 pounds per foot of depth. The first foot will cause a pressure of 30 pounds, the next 60 pounds, and in this manner the load increases directly with the depth. At the grade there is a sidewalk load to be considered. The code requires that the live load on a sidewalk shall be 300 pounds per square foot. If this is considered in terms of earth-pressure it will be equivalent to a load of earth 3 feet high. These 3 feet of earth will cause a pressure of 90 pounds at the grade.

With these considerations in mind it is possible to proceed with the actual work of design of the basement walls in the section of the building which has furnished the basis for our former discussions.

The plan of the basement wall is shown in Figure 21. The first section of wall to be considered will be that between columns 9 and 12. This is designated in the plan as section H-H and is shown in Figure 22.

The finished basement floor is 16 feet below the finished first floor. The grade at this point is 2 feet below the first-floor level, so that there will be 14 feet of wall over which there will be a pressure caused by the earth. The pressure at grade will be 90 pounds for each lineal foot, as stated above, due to the requirement that there will be a surcharge of 300 pounds per square foot upon the sidewalk. At the bottom of the wall there will be an additional pressure due to the earth of  $14 \times 30 = 420$  pounds, and this will make the total pressure at the bottom of the wall  $420 + 90 = 510$  pounds, as shown in the diagram in Figure 23. It will be noticed that the diagram is similar to that of a simple beam with a variable continuous load over 14 feet of its length. The left reaction,  $R_1$ , is in the present case at the first floor, and the right reaction,  $R_2$ , is at the basement level. These two floors are considered as supports at top and bottom of the wall. If the wall were an area wall, then a beam must be provided at the top to take up the reaction at this point.

The design of the wall resembles that of a slab with a varying load. It will be noted that the reinforcement is placed vertically. Where the bars are placed horizontally a different type of design must be used. The wall is designed in strips 1 foot wide and 16 feet long. The first step is to determine the reactions.

There will be a uniform load of 90 pounds over 14 feet, which will weigh 1,260 pounds. This load will be considered as concentrated at a point 9 feet to the right of  $R_1$ . There will be a variable load, starting at zero and reaching a magnitude of 420 pounds. This load will equal  $420 \times 7 =$

2,940 pounds, and will be applied at a distance equal to two-thirds of 14 feet plus 2 feet, or  $9.33 + 2 = 11.33$  feet. The moment around  $R_1$  will equal the sum of the products of the two loads multiplied by the respective distances between the centres of gravity and  $R_1$ .

$$\begin{array}{r} 1,260 \times 9 = 11,340 \\ 2,940 \times 11.33 = 33,310 \\ \hline 4,200 \qquad 44,650 \text{ foot-pounds.} \end{array}$$

$$R_2 = 44,650 \div 16 = 2,790 \text{ pounds.}$$

$$R_1 = 4,200 - 2,790 = 1,410 \text{ pounds.}$$

The method of finding the point of no shear, which is the next step, is somewhat complicated by the fact that the load varies. If the shear diagram is laid out graphically, as shown in Figure 24, it will be seen that the shear changes as a curved line, and the point of no shear is found to be located at a distance of 6 feet 10 inches from  $R_2$ . At this point the earth-pressure is  $30 \times 6.84 = 205$  pounds less than the 510 pounds at  $R_2$ , or 305 pounds. The loads at the right of the point of no shear can be considered as two loads; one a uniformly distributed load weighing 305 pounds per running foot, and one a variable load starting at zero and reaching a value of 205 pounds at  $R_2$ . The centre of gravity of the first load will be at a distance equal to one-half of 6.84 feet from the point of no shear, and the centre of gravity of the second load will be at a distance equal to two-thirds of the distance. The moment at point of no shear will be given by the following calculations:

$$M = (2,790 \times 6.84) - [(305 \times 6.84 \times 3.42) + (205 \times 3.42 \times 4.56)]$$

$$M = 19,083 - (7,135 + 3,197) = 8,751 \text{ foot-pounds.}$$

Engineers often assume a thickness of wall, and on the basis of this assumed depth and the moment as determined above find the required reinforcing. If it were assumed that the wall will be 1 foot thick, that there will be  $1\frac{1}{2}$  inches of fireproofing outside of the steel, and that the rods will be  $\frac{3}{4}$ -inch rods or bars, then  $d$  becomes  $10\frac{1}{8}$  inches. In this case the method of finding the stress in the steel is shown by the following calculations:

$$f_s = \frac{8,751 \times 12 \times 8}{7 \times 10\frac{1}{8}} = 11,820$$

$$A_s = 11,820 \div 16,000 = .74 \text{ square inches.}$$

If  $\frac{3}{4}$ -inch square bars are used, the area of each bar will be .5625 square inches, and there will be required  $.75 \div .5625 = 1.32$  bars per foot, or  $\frac{3}{4}$ -inch square bars spaced 9 inches on centres.

In the opinion of the author, however, it is better to determine the thickness of the wall in exactly the same manner as the thickness of a slab is found.



The maximum moment was found to be 8,751 foot-pounds, or 105,010 inch-pounds.

$$d^2 = \frac{105,010}{1,279.5} = 82.2$$

$$d = 9.1$$

$$t = 11 \text{ inches.}$$

In the present case, owing to a variation in grade, the wall was made 11½ inches thick. Under this condition  $d$  becomes 9.6 inches, and in order to find  $f_s$  and the spacing of the steel the following calculations are required:

$$f_s = \frac{105,010 \times 8}{7 \times 9.6}$$

$$= 12,500 \text{ pounds.}$$

$$A_s = 12,500 \div 16,000 = .78 \text{ square inches.}$$

Under the conditions prevailing at the time when the building was under construction it was more easy to obtain ⅝-inch square bars, so these were used. The area of these bars is .3906 inches, and the number required in each foot of length becomes  $.78 \div .3906 = 2.00$ . If ⅝-inch square bars are spaced 6 inches on centres, the proper area of steel will be supplied.

It will be noticed that in Figure 22 this is the spacing of bars called for. There are also ⅝-inch square bars called for, which act as distributing bars and are spaced 2 feet on centres. It will also be noticed that the wall is notched into the footing, and is braced at the bottom by the basement floor. Owing to the fact that the exterior of the building is of brick, a recess is made at the top of the wall to receive the brick. The method of making this recess is shown in the figure.

The next section of wall under consideration is that shown in Figure 25. This wall is between columns 12 and 13. Owing to the small span between these two columns, the reinforcement was placed horizontally. It will be noticed that the wall is divided into horizontal strips 2 feet wide. In the upper strips the bars are spaced 1 foot 2 inches on centres, and in the lower strip they are spaced 5½ inches on centres. The reason for this variation of spacing is that the load increases with the depth of the wall. Owing to the fact

that the first floor of the building pitches slightly, the distance between the finished first and basement floors at this point is 16 feet 2½ inches. Also the grade varies and the distance from the grade to the basement floor is 14 feet 6 inches. The load per running foot, owing to the 300-pound surcharge, is 90 pounds at the grade. The load at the bottom is 90 pounds plus 14.5 multiplied by 30, or a total of 525 pounds. At a point 2 feet above the basement floor this load per lineal foot will be 465 pounds. The average load on the 2-foot strip is 495 pounds. The length of the slab between columns

is 11 feet 7¾ inches. Although the average load is taken for a strip 2 feet wide, the slab is designed in 1-foot widths, as is customary in the average slab design. The load is considered as applied to the clear span of 11 feet 7¾ inches, but the span of the slab is taken as this length plus the thickness of the slab as required by the code. Assuming a slab thickness of 1 foot, the span becomes 12 feet 7¾ inches, or 12.65 feet. In order to determine the moment in the slab the following calculation is required:

$$M = \frac{495 \times 11.65 \times 12.65 \times 12}{8}$$

$$= 109,500$$

$$d^2 = \frac{109,500}{1,279.5} = 85.6$$

$$d = 9.25$$

$$t = 11.12$$

The thickness of the wall will be made 11¼ inches and  $d$  will be 9.37. To find  $f_s$  the usual formulas are applied:

$$f_s = \frac{109,500 \times 8}{7 \times 9.37} = 13,350$$

$$A_s = \frac{13,350}{16,000} = .83$$

$$.83 \div .3906 = 2.14.$$

If ⅝-inch square bars are spaced 5½ inches on centres, they will provide the proper area of steel in the lowest 2-foot section. It might be worth noting that some engineers would have used the larger unit load of 525 pounds instead of the average load of 495 pounds. It is suggested that the

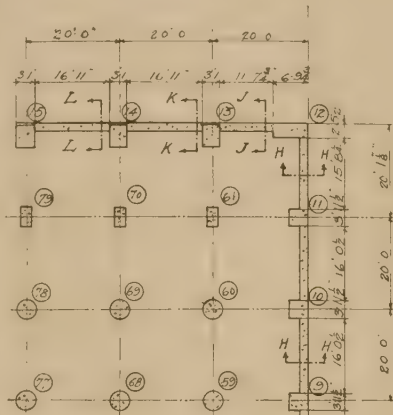


FIGURE 21

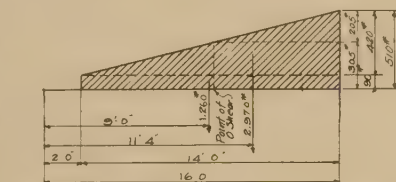


FIGURE 23

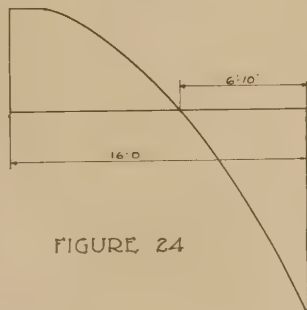
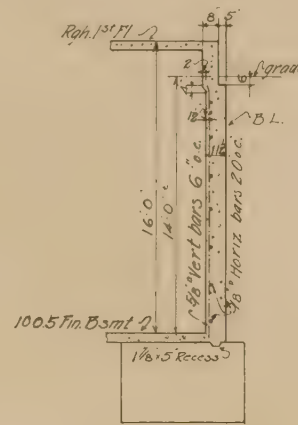


FIGURE 24



Section H-H  
bet Cols B & C  
FIGURE 22

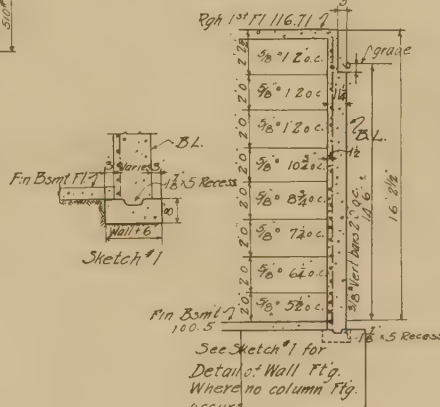


FIGURE 25 Section J-J

reader may check through the calculations given above, using the larger load, and determine for himself if there is enough difference to require this procedure.

The strip above the one last designed will have an average load upon it of 435 pounds. The same type of calculations can be carried through as shown above, and it will be found that the bars should be spaced  $6\frac{1}{4}$  inches on centres. The load decreases for each 2-foot strip by 60 pounds and the spacing increases until the distance on centres reaches 1 foot 2 inches, beyond which it is not safe to go.

In the case of horizontal reinforcing, the distributing bars are placed vertically. In the case of this particular section of wall, a small footing must be provided where the

column footing does not extend under it. This small footing is shown in the sketch.

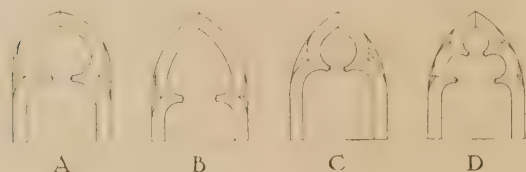
The other parts of the wall are very similar to the one shown in Figure 22, and no further discussion is necessary to explain the design.

Tables can be developed for walls of the type shown in the figures which can give the height, thickness, reactions, steel spacing, and distance from bottom of the wall to the centre of gravity of the load, for walls with vertical reinforcing. Such a table can be made without much difficulty, but its use is limited usually, as the assumption made when the calculations are carried out is that the grade is at the top of the wall. As in the cases shown above, this assumption is not always correct for certain walls.

## Some Gothic Fallacies

By David B. Emerson

**D**URING the past few years, particularly in New York City, there has been a decided tendency toward what has been called Gothic design. The most of this so-called Gothic design has been exploited in office buildings and apartment houses, and much of it has been bad. It was neither French Gothic, English Gothic, nor Flemish Gothic,



not even "Carpenters' Gothic," "Strawberry Hill Gothic," nor Victorian Gothic, just simply plain twentieth-century American skyscraper Gothic.

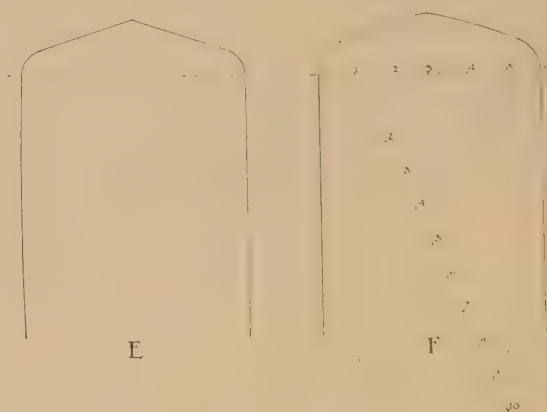
Fundamentally, the idea of the Gothic skyscraper is wrong. Such authorities as A. Kingsley Porter, or Professor Moore, would probably say that they were not Gothic at all, inasmuch as they were, insofar as the architecture was concerned, absolutely non-constructive. The buttresses resisted no thrusts, the pinnacles held down nothing, and the arches were supported by the steel frame and supported nothing themselves. All this was bad enough, but what was worse the detail was a sad hodge-podge of all of the periods and none of the periods, jumbled together without rhyme or reason, and with an absolute disregard for scale.

At the same time that this Gothic architecture was going on, some of the architects who were doing this work were designing buildings along classic lines, which were excellent, the details of which were meticulously correct. One of the most frequent aberrations to be seen in this work was the cusping of arches, either in openings or in panels. "A" and "B" are very common types of what is frequently seen, and "C" and "D" are the types which are commonly found in ancient examples. As will be noticed in the early examples, the cusping always started either at the spring line of the enclosing arch, or above it, whereas in these American twentieth-century types it very often started below the spring line. Where "B" had its origin the writer has no idea, but "A" was originated in a Grand Rapids furniture factory, and was the ornament on the legs of a "near-Gothic" table, which was extensively advertised about twenty years

ago, and a number of the aspiring Gothicists of the period copied it!

Another of the glowing evils of the misuse of the style is the method of constructing Tudor arches. The method which is frequently followed is as shown in "E." An arc with a very small radius is struck at the haunch of the arch, and then a straight line tangent to this arc is run to the apex of the arch, making something which is neither constructive nor beautiful. Contrasting this with "F," which is correctly struck from four centres, it will be very easy to note the difference.

Not only are these faults found in this commercial Gothic, but ecclesiastical and collegiate Gothic have been infected with them, although the standard of church and



collegiate architecture has, thanks to a few zealous, scholarly architects, been kept at a generally high standard. Still, evils have crept into good work. One of the most recent, and most beautiful of the numerous Gothic college buildings, would, if it were not for what seems to me an anachronism, be very nearly perfect. The introduction of a round-arched arcade with classic columns, a distinctly Renaissance doorway flanked with Ionic columns, and a balustrade which is far more suggestive of Italian Renaissance influence than of English Gothic, took something from the true Gothic character of an otherwise almost perfect piece of work. Some

(Continued on page xxxvi)

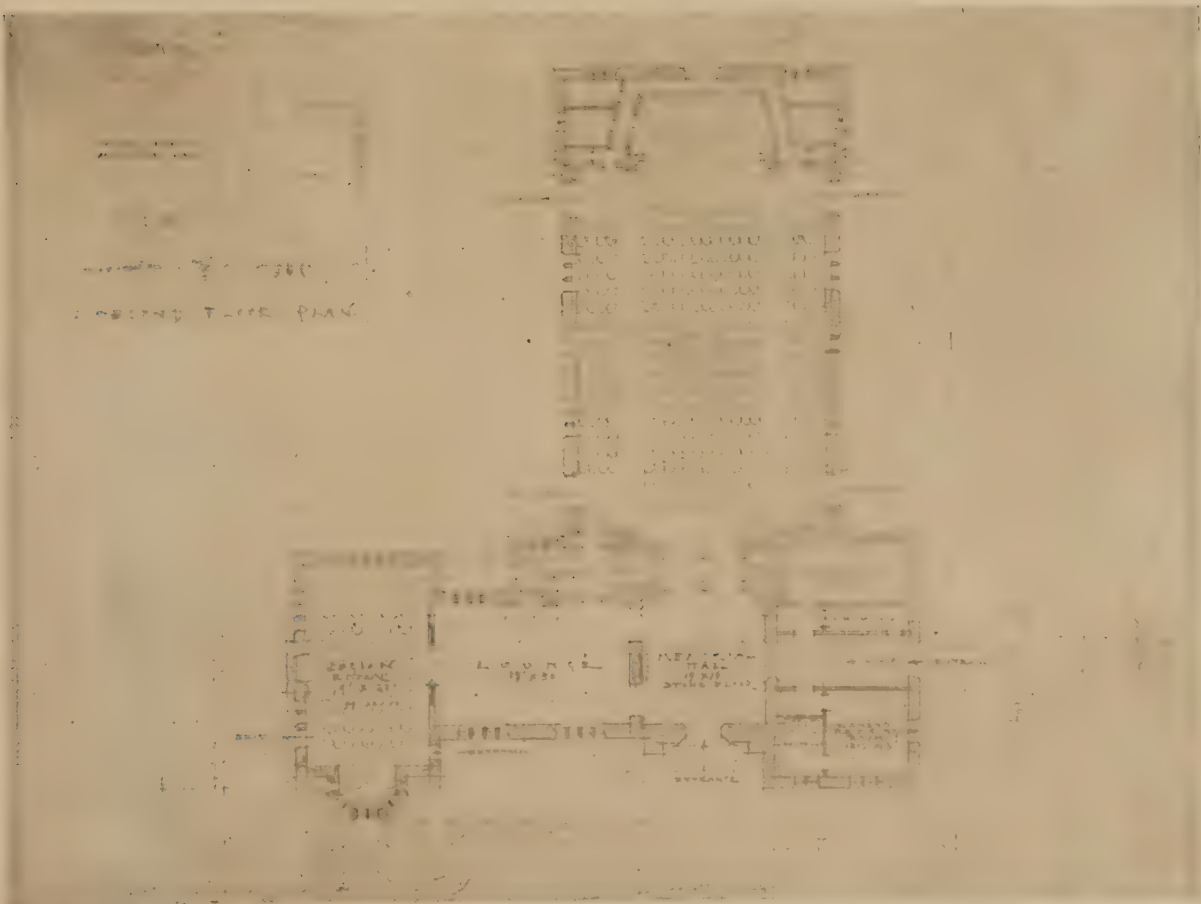




THE MERION WAR TRIBUTE HOUSE  
MERION, PENNA.

WALTER T. KARCHER & LIVINGSTON SMITH  
ARCHITECTS

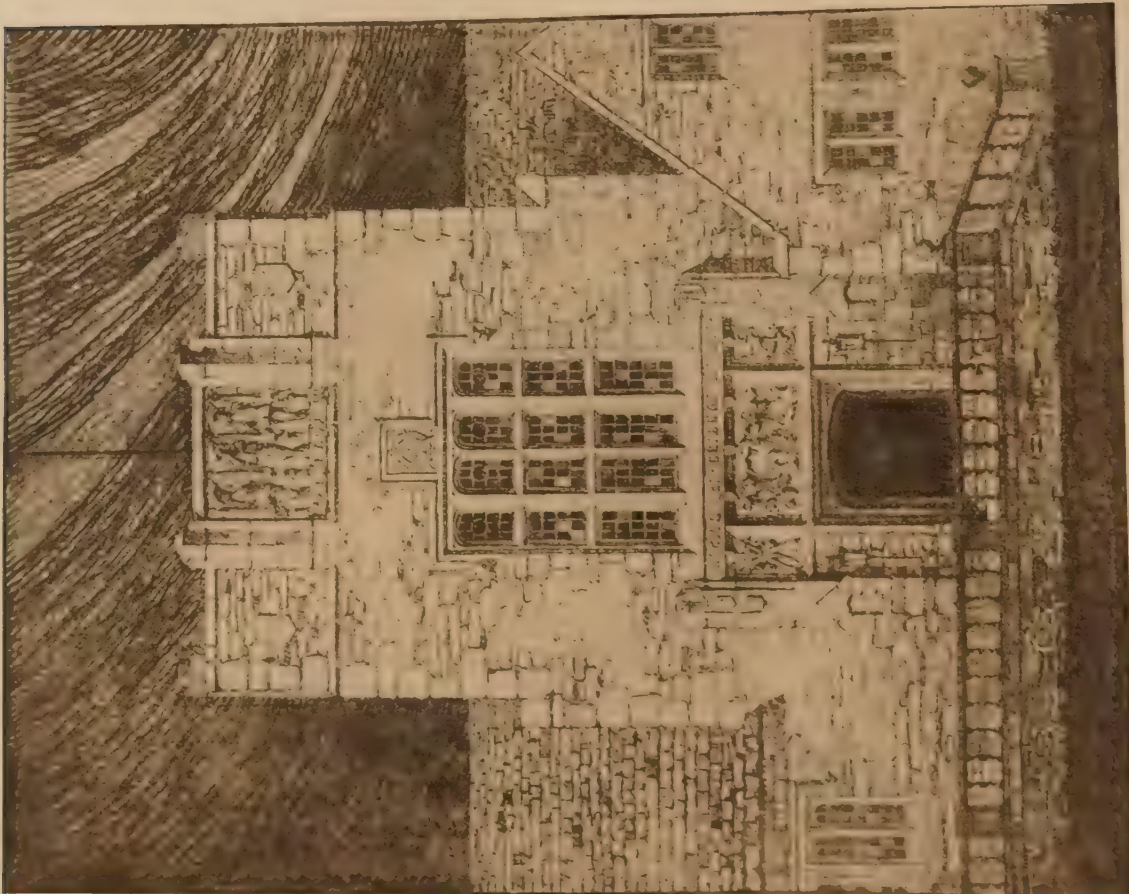
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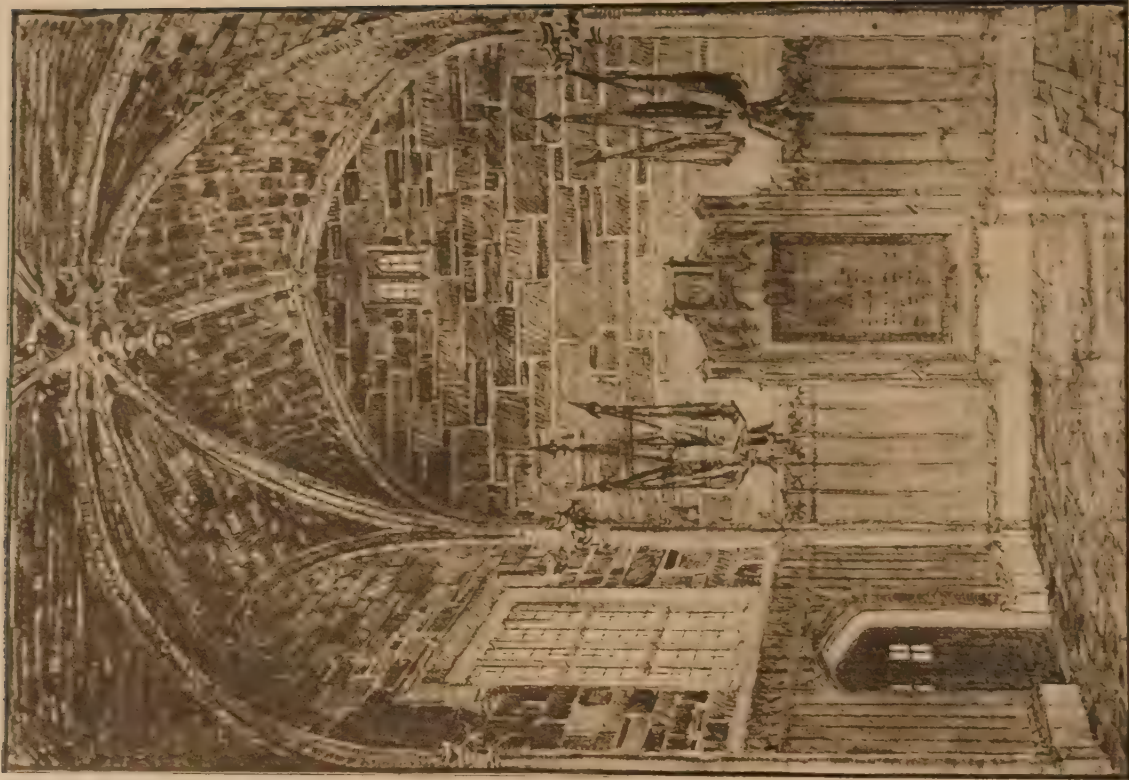
FIRST FLOOR PLAN.

Walter T. Karcher and Livingston Smith, Architects.

THE MERION WAR TRIBUTE HOUSE, MERION, PA.



MEMORIAL TOWER.



INTERIOR OF TRIBUTE HALL.

MERION WAR TRIBUTE HOUSE, MERION, PA.

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*(Continued from page 262.)*

apologists may say that the same is to be found in some of the colleges at Oxford and Cambridge. True they are, but they were put in or added at a much later date, as may be found in Gothic buildings throughout France and England, where the greatest of the mediæval monuments are marred by seventeenth and eighteenth-century Renaissance additions and furnishings.

To call attention to an error or an evil, and to give no reasons therefor, or to suggest a remedy for them, is usually a proof that the evil does not exist, and that the fault lies largely with the finder. The reason for the generally bad quality of Gothic design exemplified in our office buildings and apartment houses, is, in the writer's opinion, largely due to the lack of careful study of the style on the part of a great number of our architects and architectural designers. The remedy for all this is to study the style carefully from both a geographical and an historical standpoint, to become able to distinguish the differences between French, English and Flemish Gothic, and to differentiate between the work of the

thirteenth, the fourteenth, and the fifteenth centuries in these countries. Study at short range from the originals, if possible, if not, study from the best authorities which, at the present time, are readily accessible. Most of the better libraries have Pugin's "Specimens of Gothic Architecture," and "Examples of Gothic Architecture," Brandon's "Analysis of Gothic Architecture," and Colling's "Gothic Details" on their shelves. In addition to these measured works, there are also numerous recent works, with photographic illustrations, which are also to be found in all of the leading libraries. In studying from the originals, and from photographs, care must be taken to learn to differentiate between the really old work and the restorations and additions made by Wren in the seventeenth century, by Wyatt and others in the eighteenth century, and by Sir Gilbert Scott, Viollet-le-Duc, and a legion of lesser lights in the nineteenth century, which has a tendency to confuse the student, and is, in a large measure, responsible for some of the weird attempts at Gothic design we see.

## Announcements

Charles T. Main, engineer, will be located after July 1, 1922, in the Massachusetts Trust Building, 200 Devonshire Street, Boston, Mass. He is organized to do engineering work for all kinds of industries, including textile mills and other industrial plants, storage and terminal facilities, water-power and steam-power developments, and examination and reports on plants with reference to their value, reorganization, or development.

It is announced that Mr. Fred D. Sumner has withdrawn from the firm of Leonard F. W. Stuebe & Company, architects and engineers, Danville, Illinois. Leonard F. W. Stuebe will continue the practice of his profession independently in the quarters occupied for a number of years at 415 Adams Building.

The Mills and Millspaugh Company announces a change in its corporate name, honoring its vice-president and secretary, Mr. Daniel A. Carmichael, by the addition of his name, as follows: The Mills, Millspaugh and Carmichael Company, architects and engineers, Columbus, Ohio.

The Economy Fuse and Manufacturing Company of Chicago, Illinois, announces the appointment of Mr. Chas. H. Bluske as district sales manager of the Los Angeles office at 1304 Maltman Avenue. Mr. Bluske was formerly connected with the Pacific States Electric Company of Los Angeles, and succeeds Mr. Geo. L. Davis. The Pittsburgh Sales Office of the Economy Fuse and Manufacturing Company has been moved from 2223 Farmers Bank Building to 1006 Peoples Bank Building at Fourth Avenue and Wood Street.

L. S. Trainor has been appointed district engineer, in charge of the Illinois district of the Portland Cement Association, to succeed C. M. Powell, resigned. This office, located in the Conway Building, Chicago, has charge of association work in Illinois. Mr. Trainor has been connected with the Portland Cement Association for the past three years, and has been engaged principally in southern Illinois. Prior to joining the association staff he was County Superintendent of Highways, Marion County, and City Engineer of Centralia, Illinois.

William Francis Leppin, architect, is returning to New York from Tokyo, Japan, after completing his work in connection with the modern office buildings and banks in the Orient being built by the Geo. A. Fuller Co., of the Orient, Ltd.

Colonel W. A. Starrett, formerly with the Fuller Co., announces the organization of the new firm of Starrett Brothers, builders, 101 Park Avenue, New York.

Nairne W. Fisher, of Madeira, Minnesota, and C. W. Jackson have formed a partnership for the practice of architecture in Bemidji, Minnesota, and would like manufacturers' samples and catalogues.

Brentwood S. Tolan, architect, formerly of Fort Wayne, Ind., is now associated with De Curtins & Rawson, architects, Lima, Ohio, under the firm name of De Curtins, Rawson & Tolan, with offices at 503 Opera House Block, Lima, Ohio.

## Book Reviews

**MODERN PLUMBING ILLUSTRATED.** Fourth Revised and Enlarged Edition. By R. M. STARBUCK, Author of "Questions and Answers on the Practice and Theory of Sanitary Plumbing," "Standard Practical Plumbing," etc. Fully Illustrated by seventy detailed engravings, which have been made specially for this book. An up-to-date practical book on modern plumbing practice. Illustrating and describing the drainage and ventilation of dwellings, apartments and public buildings, etc. The standard work for plumbers, architects, builders, property-owners, and for boards of health and plumbing engineers. The Norman W. Henley Publishing Company, 2 West 45th Street, New York.

Mr. R. M. Starbuck, the author, is an authority on the subject. The book has been adopted and used as a reference book by the United States Government in its sanitary work in Cuba, Porto Rico, and the Philippines, and by the principal Boards of Health of the United States and Canada, the subjects considered ranging from the connections of fixtures and all other detail work to all classes of private and public buildings. It contains seventy full-page or detailed plates which have been drawn specially for the work. These plates show all kinds of modern plumbing work. Each one of these seventy detailed plates is accompanied by several pages of descriptive matter, in many instances as many as eight or ten pages of text being devoted to a single plate. This text forms a critical and concise treatment of each phase of the work under discussion.

It gives connections, sizes, and working data for all fixtures and groups of fixtures. It is helpful to the master plumber in demonstrating to his customers and in figuring of work. It gives the mechanic and student quick and easy access to the best modern plumbing practice.





# ARCHITECTURE

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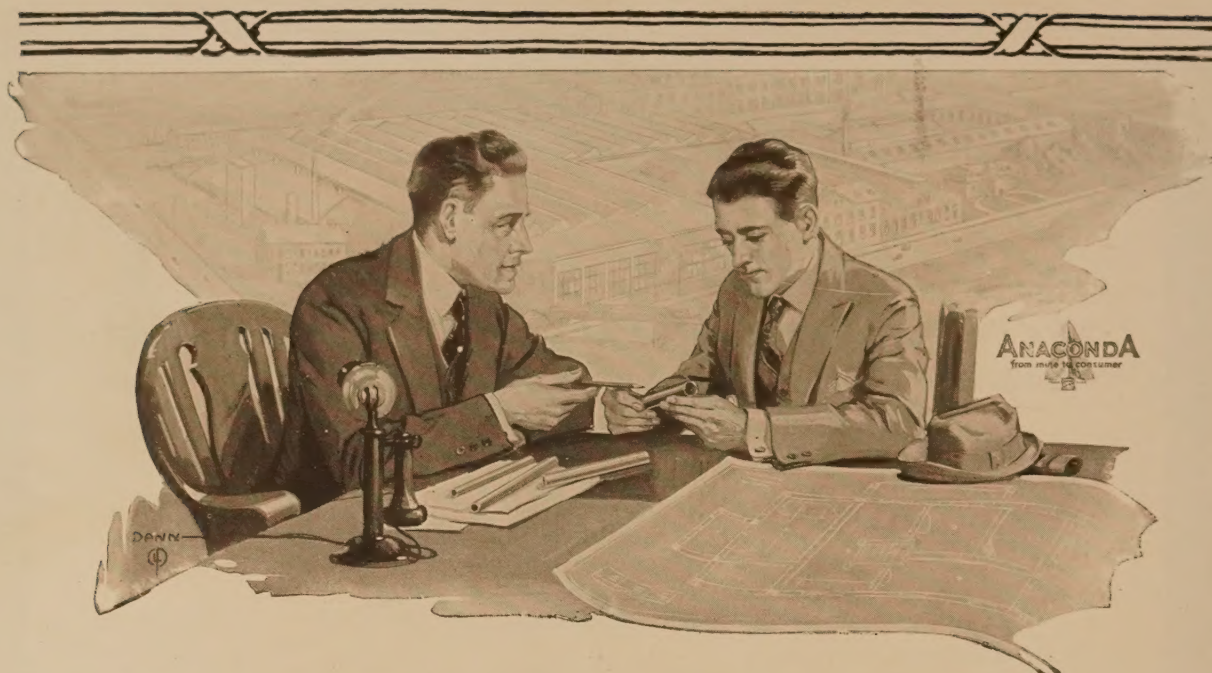
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